the American Perfumer and ESSENTIAL OIL REVIEW

DECEMBER, 1955

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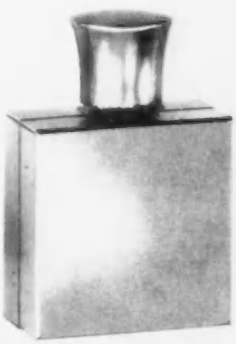

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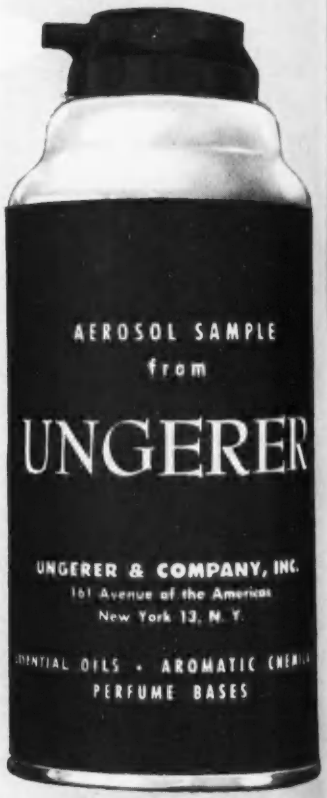

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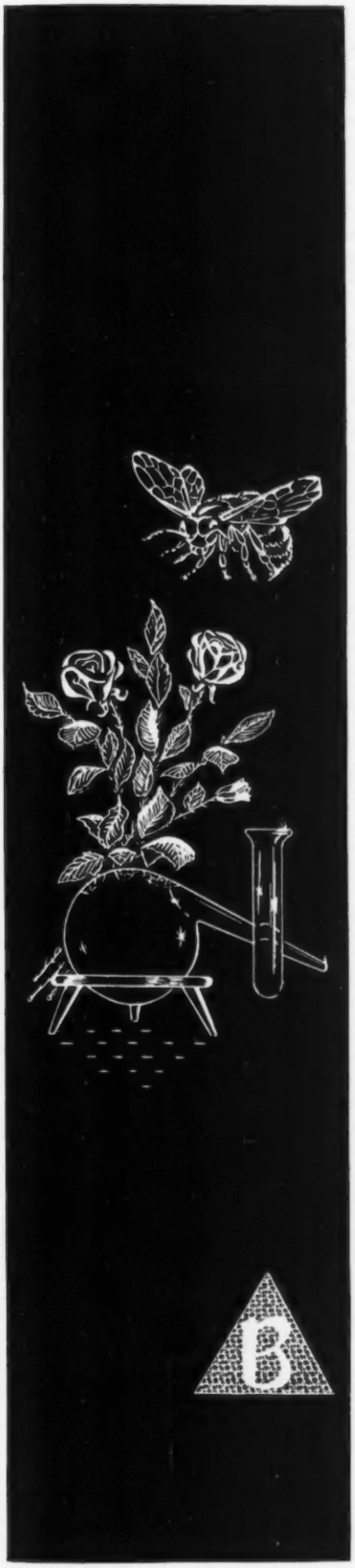

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SAN FRANCISCO
McDonald-Thompson, 625 Market Street, San Francisco 5, Calif. Yukon 6-0647

EDITORIAL AND EXECUTIVE OFFICES
48 W. 38th St., New York 18, N.Y. LOngacre 5-3320

PUBLISHED MONTHLY by Moore Publishing Company, Inc. Publication office: Emmett St., Bristol, Conn., U.S.A. Editorial and Executive Offices: 48 W. 38th St., New York 18, N.Y. J. H. MOORE, Chairman of the Board; J. H. MOORE JR., President; LUCIAN NEFF, Vice President; G. R. BRENNEN, Secretary. Subscription Rates: U.S.A. and Possessions and Canada, $4.00 one year; 50 cents per copy. Foreign, $10.00 one year. Entered as second class matter, January 12, 1950, at the Post Office at Bristol, Conn., under act of March 3, 1879.

Moore Publishing Co., Inc., is publisher also of *Advertising Agency Magazine, American Printer & Lithographer, Gas Age, Gas Appliance Merchandising, Industrial Gas, LP-Gas* and *Brown's Directory of American Gas Companies.*

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ABC

Cable Address: Robinpub, N. Y. Volume 66, Number 6 (*Copyright* 1953, *Moore Publishing Co., Inc.*)

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the American Perfumer and ESSENTIAL OIL REVIEW

COSMETICS · SOAPS · FLAVORS

Established 1906

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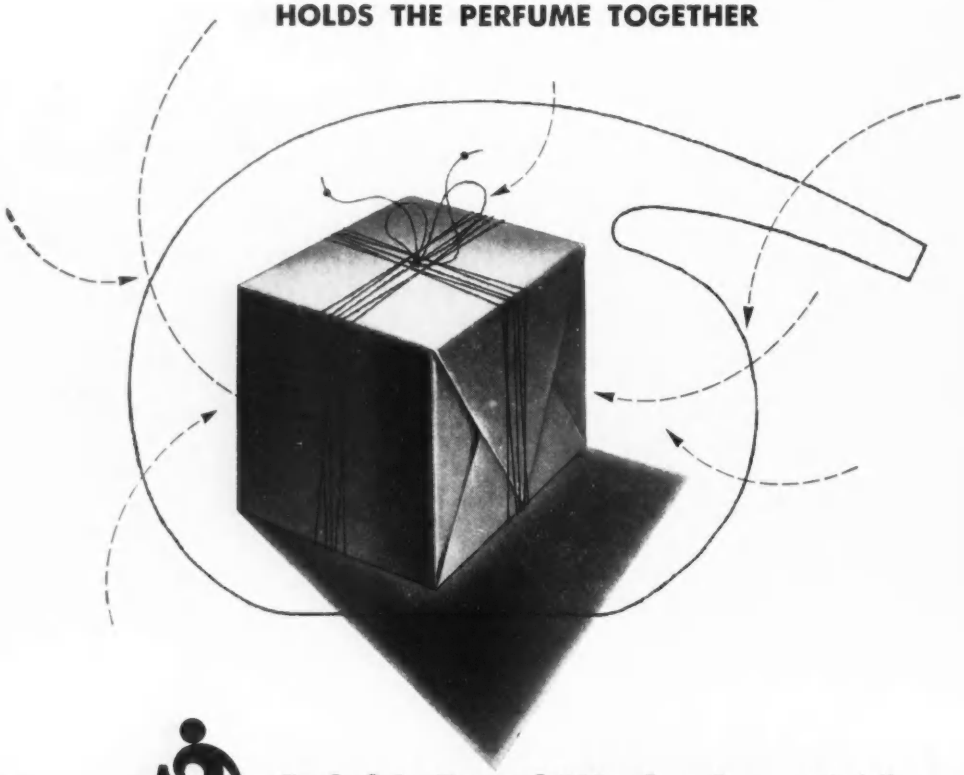

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Announcement

The Polak & Schwarz Research Department has concluded its research in the field of Aerosol. The experience gained is available to Aerosol Manufacturers. Pending these investigations Polak & Schwarz refrained from any activity in this sphere. They now wish to draw the attention of interested parties to the services they can render in the whole field of Aerosols from propellent to active ingredient and from container to perfume.

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Try "Myvacet" in baby oil. See how much lanolin goes into the mineral oil without clouding.

Try it in lipstick. Let it replace castor oil and see it improve fracture resistance and lessen the greasy feeling.

Try it in hair dressings. See whether it introduces less greasiness and staining tendency than castor oil.

Try it in alcoholic lotions. See if it won't provide the same lubrication as isopropyl myristate or isopropyl palmitate and yet leave no greasy residue.

Try it in shampoo. See a liquid cream shampoo formula produce a cream paste shampoo when *Type 5-00* replaces glyceryl monostearate or a heavy liquid cream shampoo when *Type 9-40* is used.

Try it in powder foundations. See a more homogeneous paste than with isopropyl palmitate and a non-shiny film on the skin.

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Desiderata

BY MAISON G. DENAVARRE, F.A.I.C.

Skin Oils—Lanolin

We all know that the use of isopropylated esters of certain fatty acids with lanolin to produce a colloidal fluid suspension oil-like product is patented. Oleyl alcohol is similarly patented.

As a starter, there are a number of "lanolin oils," so-called fluid lanolins. These can be diluted with mineral oil and variously opacified. Certain stearates, hydroxystearates, behenates, cationic bentonites and lanolin alcohol fractions are worth fooling with. Beeswax and microcrystalline waxes, not to forget petrolatum, are also worth trying.

Hard Water In Emulsions

This department has written on the subject of using chelating agents, in hard water areas, in water used in making emulsions. Now a more thorough study has been reported by Marchisotto, Christian and Sperandio (J. Am. Pharm. Assn. Pract. Pharm. Ed., *16*, 613, 1955).

They used (1) distilled water

(2) hard water 374 ppm. $CaCO_3$ and EDTA
(3) hard water 50 ppm. $CaCO_3$ and EDTA
(4) hard water 100 ppm. $CaCO_3$ and EDTA
(5) hard water 200 ppm. $CaCO_3$ and EDTA
(6) hard water 374 ppm. $CaCO_3$ and EDTA
(7) hard water 500 ppm. $CaCO_3$ and EDTA

When emulsions are prepared with monovalent soaps, it is expected that very hard water can cause emulsion instability—and so these workers find. Emulsions made with water of 500 ppm. hardness were least stable. Emulsions made with distilled water were most stable. Use of the chelating EDTA (disodium salt) in stoichiometric amounts was a distinct aid in making stable emulsions. The authors use size-frequency analysis to determine the relative stabilities of the several emulsions.

Wasting Castor Musk

The Canadian Department of Lands and Forests tells me that due to the increasing numbers of beaver trapped, there is a corresponding increase in the available beaver castors. Somehow the use of the musk-like fixative of beaver castors seems to be waning and as a result beaver castors are being thrown away.

In an attempt to put this valuable material to use, they are hoping that interested people will go after this commodity which has been highly prized for its blending and fixative properties in the recent past. It wouldn't take much to make this product popular again, once an important new fragrance was built with it. Being a North American natural raw material, should make it interesting too.

Anyone interested should write S. C. Simons, Division of Fish and Wildlife, Department of Lands and Forests, Lindsay, Ontario, Canada.

Fischer-Tropsch Waxes

At last, American suppliers are now in this market. However, first observations indicate some more refining is needed. The characteristic odor is not "cosmetic." Some grades have good color.

Rare Earth Antiperspirants

Many will recall Janistyn's publication on antiperspirants of pre-war times in which reference is made to rare earth metals as antiperspirants.

One of the large producers of rare metals offers a Code 340 complex of rare earth chlorides which are water soluble, for a nominal price. The ratio of the various rare earth metals (as chlorides) is the same as found in Monazite, except that the 1 per cent of Yttrium found naturally, is reduced to about 0.2 per cent.

True that the price is higher than aluminum chloride, but there may be advantages in using this new material.

Notes

EDTA sequestrants at pH 7.5-5.6 have retardant effect on rancidity when used with ascorbic acid and tocopherol. . . . A Florida testing service offers many types of testing and research in that climate. . . . A new book by H. P. Fiedler printed in German on the subject of Der Schweiss is a good review in almost 300 pages—covers antiperspirancy and deodorization. . . . U.S. Patent 2,626,951 covers the use of starch phosphates for stabilizing fats and oils by removing iron and copper. . . . GLAMOUR magazine reports 88 per cent of the women use colognes and only 80 per cent use perfume—but all of them love fragrance. . . . Azulene is said to reduce skin irritation resulting from permanent waving. . . . University of Illinois got the royalties on ammoniated dentifrices but the University of Indiana gets them on the use of stannous fluoride already being market tested by P & G. . . . diethyl

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and dibenzyl sebacates are worth looking at as cosmetic materials. . . . sitosterols might find a use to fight cholesterol deposits in the blood system—maybe it isn't so crazy to add a couple per cent to cosmetics containing lanolin—who knows? Did you know you could use Pluronics as hair dye vehicles. . . . Kolmar have developed a Gold Digger—called so because it is golden in color and really digs dirt off from skin—already being used by cosmetic manufacturers. . . . Just saw a sample of Van Dyk's isopropyl linoleate—sure is quality stuff for essential unsaturates. . . . Coleman, in a letter to the editor of the J. A. M. A. stresses the need for skin testing for Penicillin sensitivity—He claims that skin testing is not only feasible but "is occasionally a life saving procedure." Just looked at some antiperspirant cream samples sent out by Goldschmidt back in 1939, based on their Tegacid—still soft, smooth, creamy and non-crystallized. . . . American Lecithin Company has just sent in some literature on the synergistic effect of cholesterol and lecithin on cell permeability—we never have gotten around to using lecithin in the U.S. as it is used in other countries. . . . A. M. A.'s Committee on Cosmetics has an interesting report on "Acne Vulgaris" by Malkinson, in the November 12, 1955 issue. . . . Littlejohn has done much at P. E. O. R. to modernize the paper and his 1955 Buyer's Guide is an improvement over earlier issues—Some of the material has been used quite a few years—it ought to be finally dropped in favor of more new stuff—just a suggestion, Mr. Littlejohn . . . Do not confuse Fischer-Tropsch waxes with Montan wax—the later is extracted from lignite coal whereas the F-T waxes are hydrocarbons, sometimes oxidized partially. . . . The Dragoco Berichte has a good story on peppermint and its oils. . . . U. S. Bottlers has a new hand filler for gravity fill of liquids—the unit has four interchangeable stems. . . . The Aquaness Corporation does custom oxyalkylation and esterification with ethylene and propylene oxides. . . . Brown & Hayes (Analyst, *80*, 755, 1955) describe in detail an absorptiometric method for the determination of polyethyleneglycol fatty derivatives—Test is based on a blue color reaction using cobaltathiocyanate—Test can be used qualitatively on other compounds. . . . Rae reports that there is a gradual increase in fluorine content of teeth with age (Chem. in Canada, October, 1955)—He points out that dental enamel becomes acid insoluble due to a coating of CaF on teeth—that other materials can have a similar effect—there is no correlation between the lactobacillus count and dental caries (shades of whom). . . . mono and diglycerides form urea adducts. . . . Does someone know why mink oil should be so good in cosmetics—if it is? . . . The Hormel Institute reports a method of separating mono-, di- and triglycerides by micromolecular distillation. . . .

Questions & Answers

1170: Hair Rinse

Q. I am interested in making a viscous, pink-colored cream rinse for the hair. Could you please suggest some starting formulations. *T. G. M., N.Y.*

A. The basis of most hair rinses is a cationic compound of one kind or another. We have published general formulas in the "Question and Answer" section in "Desiderata" a number of times. Essentially, you use around 10 to 12 per cent of a quaternary paste. Add to it from 1 to 2 per cent of a nonionic substance like a higher alcohol, emulsify the whole thing, slightly acidify to a pH of about 4.5 with citric or acetic acid. Add color and perfume to suit.

1171: Preservatives Bulletin

Q. I would appreciate some information in regard to your bulletin "Antiseptics, Germicides and Preservatives" which supposedly appeared in THE AMERICAN PERFUMER, Bulletin, 1936. Since I do not have the exact reference, you would oblige me with either that or a reprint if available. *S.C.I., Mich.*

A. The item to which you refer is a Bulletin published on preservatives and so forth, a number of years ago and has never been reprinted. The title you have is correct as well as the date, but we honestly do not know where you will get one of these. Try your public library.

1172: Pressed Powder

Q. Will you kindly forward to us, if it is possible to do so, a suggestion or a formula that we can use in making a compact pressed powder which would be similar to the present "Love Pat" made by Revlon and "Angel Face" made by Ponds. What we are really after is a good binder to hold the powder and at the same time be of a texture that would be soft and smooth, similar to "Love Pat." *S.R.M., Ill.*

A. We are unable to give you a formula for pressed powder beyond the data we have published in THE AMERICAN PERFUMER. *We do not know the composition of the products you mention and are not in a position to attempt an analysis. As for binders for the powder we can only refer you to the classical binders in powder form, for pressed powder, namely, the metal stearates, vegetable gum, or those made from synthetic-like gum substances and oils, fats and waxes. Thus, we know that some tablet manufacturers have used stearic acid as a binder. Veegum (R. T. Vanderbilt Co., Inc., 230 Park Ave., New York 17, New York) is said to be used in compressed cake powders. Beyond this, we are unable to help you.*

1173: Manufacturer

Q. I am writing to you searching information about the manufacturer of these products: Lathanol LAL (sulfoacetate laurilo sodium) and Aerosol AY (di-amilsulfosuccinate of sodium). *T.A.M., Mexico.*

A. The Lathanol LAL is made by the National Aniline Division, Allied Chemical & Dye Corp., 40 Rector Street, New York 6, New York. Aerosol AY is supplied by the American Cyanamid and Chemical Corp., 30 Rockefeller Plaza, New York 20, New York.

1174: Carbitol

Q. As a subscriber to your magazine, we would be much obliged if you would advise us if the use of Carbitol is restricted in cosmetics. We have been told by a private label house that we should not be using this chemical in our cleansing creams and emulsions. *P.I.L., Oregon.*

A. Carbitol is allowed to be used in cosmetics up to 5 per cent and no more. Other polyols suitable for the purpose are propylene glycol polyethylene glycols and sorbitol syrup.

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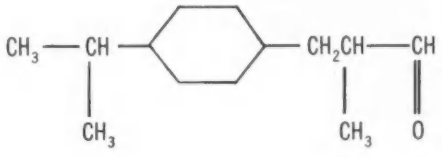
(CYCLAMEN ALDEHYDE)

$C_{13}H_{18}O$



Molecular Weight: 190.27

Typical Specifications:

PHYSICAL APPEARANCE:	Nearly colorless liquid.
ASSAY:	93% minimum Aldehyde content.
ODOR TYPE:	Floral; Lily-of-the-Valley or Muguet.
SOLUBILITY (@ 20°C):	10 parts soluble in 15 parts 80% Ethyl Alcohol.
STABILITY:	Lasting in soaps, cosmetics and of a high quality which permits its use in the most expensive perfumes.
REFRACTIVE INDEX $(n\frac{20}{D})$**:**	1.5055
SPECIFIC GRAVITY $(\frac{25}{25})$**:**	0.950
SUGGESTED USES:	As a base for Lily-of-the-Valley and Muguet perfumes to 5%; as a floral modifier from ¼% to 5%.

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Swelling and Softening

DR. R. HEILINGOTTER*

DETERMINATION of swelling and softening of human hair is an important factor when manufacturing cold-wave solutions. Softening of hair takes place in two steps. According to the interpretation which is at present in vogue, swelling occurs owing to the action of hydrolyzing mediums, e.g. owing to the action of alkalis, which are disrupting the salt and hydrogen bonds of the keratinous fibre. In this way, the so called "group one forces" (Whitman[1]), slacken. Then follows the softening action in disrupting the disulphide linkages owing to the action of alkaline thiol-solutions, e.g. by means of thio-glycolates as reagents, in which stage the "group two forces" disappear. In this way, all the linkages, which have kept together the long polypeptide chains of the keratine have been broken and the hair loses its elasticity and fastness and becomes slack and easy to handle.

The hair can be swollen a hundred and more percent of its original thickness. Swelling and softening occur mostly parallel to each other, but in some cases irregularities can be traced.

Media for Cold Waves

The most common and most efficient swelling and softening media used for cold-wave solutions are those of alkaline solutions of mercaptan compounds, usually ammonium thio-glycolate in an alkaline medium, of which the efficiency is of greatest importance in cold-wave procedure. Consequently it is essential that swelling and softening properties of such solutions are studied carefully.

Methods Used

Two methods are used for determining the swelling of hair. First the direct measurement by using a microscope and ocular-micrometer in order to determine the increase in thickness of the hair, embedded in the solution under test.

Such a study on single human hairs was made by Eckstrom.[2] He mounted single hairs in a clear lucite cell under a microscope and measured the rate of increase in the diameter of the hairs, when immersed in thio-glycolate waving lotions. Then he measured the rate of swelling, when neutralized, or in other words, when stabilized, in a potassium-bromate solution. The measurement of the thickness of single hairs is somewhat

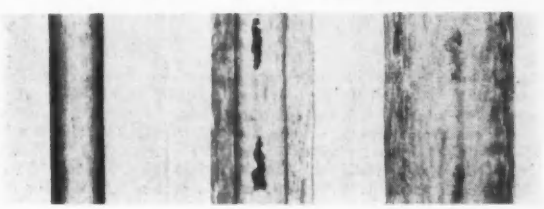

Fig. 1—Swelling of hair by Evans: (a) untreated hair. (b) same hair after two minutes influence of alcaline thio-glycolate solution. Swelling agent shows a sharp and distinct light penetration zone. Hair diameter is increased. (c) after ten minutes the swelling agent has penetrated the whole hair. The hair diameter is strongly increased.

complicated and needs a great number of measurements with different fibres in order to get good average results. The second method used by Preston and Nimkar,[3] Valko and Barnett,[4] is the centrifugal method, which measures the increase in weight after having swollen the hair in the solutions under test. The surplus of moisture is removed by centrifugation under special working conditions. This method includes certain factors of insecurity which can only be eliminated by following carefully the given research conditions.

In spite of the fact that the first method has the disadvantage of giving results slowly, I have chosen this method. As already said before this method makes it necessary to take a greater number of measurements

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than with the second method in order to get sufficient reliable results.

The picture which can be seen under the microscope of the swelling of hair in alkaline thio-glycolate solutions, is demonstrated through microphotos by Evans[5], Fig. 1. After a short stay in the swelling solution there appears in the cuticular region a distinct light zone of penetration, which becomes broader and broader and finally affects the whole hair. At the same time the diameter of the hair increases. The direct measurement of the hair diameter under the microscope is sufficiently exact, if small differences through the movement of the hair during observation can be overlooked. The hairs always tend to slightly curl; the danger of moving is

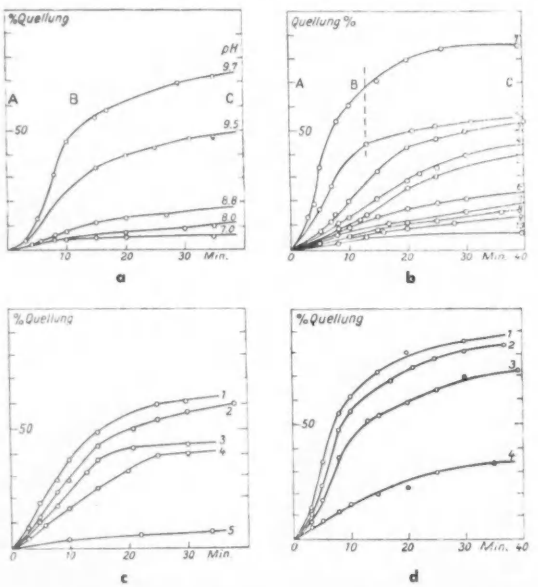

Fig. 2—Swelling of hair in an ammonium thio-glycolate solution, 7.4%: (a) alkalised with ammonia at a pH-value of 7.0 to 9.7; (b) and (c) influence of the addition of different substances to the same solution: (b1) without addition (b2) 5% NaHCO3 (b3) 5% Na2CO3 + 1% Na2B4O7 (b4) 10% Na2S2O3 (b5) 16% Na2SO3 (b6) 20% NaCl (b7) 10% Nc2S2O4 (b8) 20% Na2SO4 (b9) 20% NH4Cl (b10) 1.25% NH3, only in water; (c1) without addition (c2) 10% alkysulfonate (c3) 10% Na2S2O3 (c4) 5% (MH4) 2SO3 (c5) 5% Monoethanolamine, only in water; (d) influence of the addition of sodium sulphite to the same solution: (d1) 0.0% Na-2SO3 (d2) 1.0% Na2SO3 (d3) 4.8% Na2SO3 (d4) 16.0% Na2SO3.

very slight. In order to prevent the loss of volatile alkali, e.g. of ammonia, as well as changes in the concentration due to evaporation, it is necessary to enclose the coverglass on all sides with cedar oil or thick mineral oil.

When following the swelling phenomena in stages of time it can be observed, that the increase in diameter of the hair takes place very quickly in graphs A-B (Fig. 2). At point B the curve shows a slight bow and follows gradually its course and approaches a maximum in an assymtotic manner. This phenomena can be explained as follows. On the traject A-B a quick penetration of the solution into the hair occurs, whereby the solution first enters into the intercellular spaces, then penetrates into the intermicellar spaces and finally into the micelles. At this point the rate of swelling diminishes and all the side linkages, which have formerly stabilized the hair configuration are slackened. The hair loses its "hold"; fastness and elasticity are slackened and the hair becomes soft and smooth. Strength and speed of swelling are indicators of the curling power of the solutions under test. The increase of swelling in thio-glycolate solutions depends in a distinct way upon the pH-value, as can be seen from Fig. 2a.

In Fig. 2b and 2c the influence of the addition of

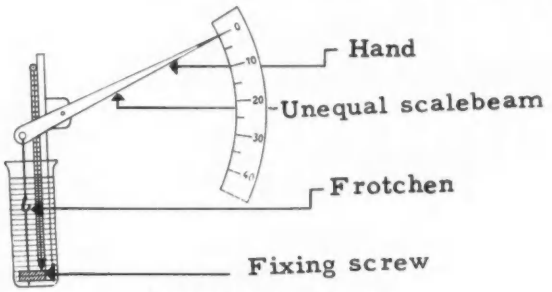

Fig. 3—Hair softening meter.

different substances upon the same solution is shown and Fig. 2d demonstrates the influence of different sodium sulphide additions upon the swelling.

Softening Action

It is also possible to determine the softening action of a cold-wave lotion with the help of a special apparatus, and to register the results in order to control the action of swelling. I have found that the determination of the softening power is so characteristic, that I have preferred to use this method only for testing the efficiency of cold-wave lotions. For this purpose I use the following apparatus (Fig. 3). This apparatus consists of an unequal beam balance. The longer end of the beam acts as a pointer on a scale divided in per cent of the extension of the hair under test. The short end of the beam has a hook. When starting for tests an adjustable clamp screw is placed at a distance of exactly 50 mm. below the movable hook. The hair is twisted around the knot and is then fixed at the two ends by means of the clamp. The large beam has an overweight over the short one, which takes care that the hair under test will be stretched continuously. The overweight has to be ad-

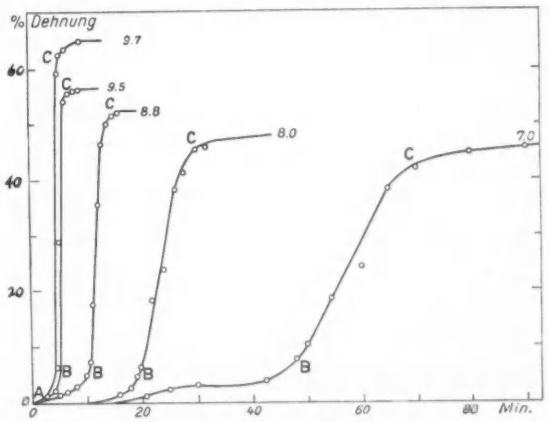

Fig. 4—Softening curves. Influence of pH-value of ammonium thio-glycolate solutions, which have been alkalised by ammonia.

justed in such a way, that a hair of a thickness of 96-100 My is only stretched slightly under water. The overweight used was 15 grms. and the hair shows then none.

or only a very small extension of approximately 1% maximum. The solution under test is then brought in a beaker of approximately 150 ml. capacity and the hair

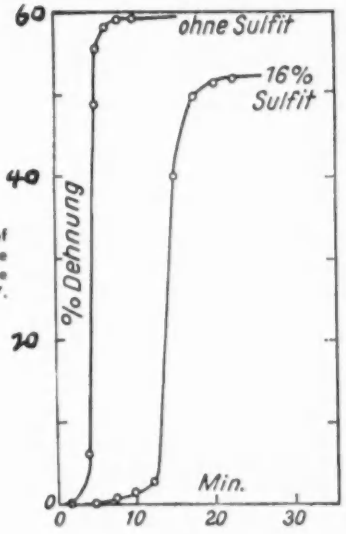

Fig. 5—The influence of sulphite addition on the softening action of the same solution at pH=9.7.

immersed in such a way, that the whole length of 100 mm. stays in the solution. If now the arrestment of the indicator is opened and from this moment on, the movement of the indicator is followed in conjunction with the time and plotted on a graphic way, a typical curve results in a sufficient reproducible way, provided the same hair material is always used for these experiments.

Process of Softening

The curve gives a good indication regarding the process of the softening of the hair. With medium strong cold-wave solutions the determination is not so difficult, but it is not always a success when strong solutions are under test. Some hairs will break on weak points of the structure and the whole curve cannot be taken. The stronger the concentration of the solution and the higher in pH-value, the greater is the possibility that hair will break. When testing strong solutions, there is a possibility of avoiding breakage by using a lower weight. The measurement of single hairs need a great number of determinations in order to get good results. The number of determinations can be reduced by taking three hairs instead of one and consequently using a triplicate weight. Some typical curves obtained in this way with material of 97 My diameter, immersed in an ammonium thio-glycolate solution of 5.4% thio-glycolic acid, are shown in Fig. 4.

The diagram also shows the influence of pH-value of the solution upon the softening action of hair. For these purposes the same thio-glycolate solution is adapted to different pH-values by adding suitable substances. It is shown that after a distinct period of time A-B, during which the penetration of the softening solution takes place, the first strong swelling occurs, and at point B, the softening of the hair begins and a large extension can be stated. At point C this extension comes to a stop. The distance A-B gives an indication about the softening power of the solution under test and A-C the amount of maximal stretching. The distance A-B can be measured in an exact way by prolongating the arising traject B-C to the abscissa. I call this distance A-B the softening point, S.P., expressed in minutes, which gives a good characterization of the solution under test. The hair material mentioned above gives owing to its thickness, under these more difficult conditions, a good test about the efficiency of the waving solution. This hair material is continuously used for the following determinations. With this softening meter all kinds of waving solutions were tested. I have worked on a large scale with many waving compositions, with and without the addition of thio-glycolate. The average results obtained were unsatisfactory and quite a less softening action can be stated on the solutions without thio-glycolic acid in comparison with the usual cold-wave lotions. None of the examined substances has given a similar strong softening action as that of thio-glycolates or other mercapto compounds. Valko and Barnett[4] have obtained similar experiences on approximately a hundred substances by measuring the swelling power of their solutions and came to the same result, so that the necessity arises to work further with thio-glycolates or with alkaline solutions of other mercapto-compounds in the cold-wave procedure.

It is of special interest to state, that different additions to cold-wave lotions can be of great influence upon their efficiency, so that it is wise not to work in an empiric manner. At first it must be stated, the addition of detergents to cold-wave lotions, which is often practiced, gives in most cases unwelcome effects. Detergents generally act as a buffer, striking down the pH-value as well as the efficiency of the solution in question, so that disagreeable surprises are the result.

Alkali Sulphites

A popular way is the addition of alkali sulphites to the cold-wave lotions. In most of the cases these addi-

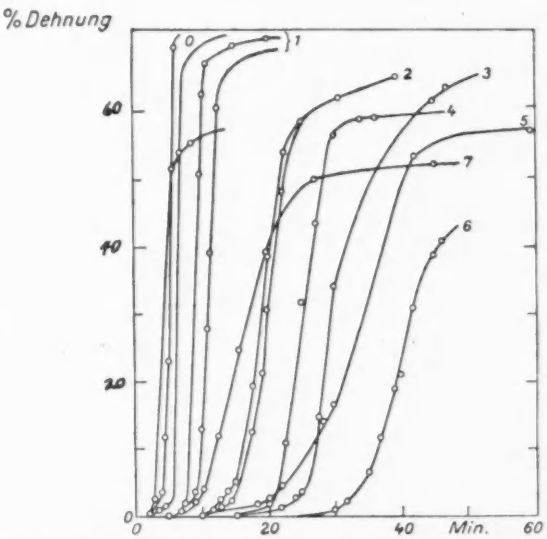

Fig. 6—Influence of addition of different salts to the same solution at pH=9.7: (0) without addition (1) 20% NaHCO3 (2) 20% Na2SO4 (3) 20% NH4Cl (4) 10% (NH4)2CO3 (5) 17% CH3COONH4 (6) 20% NaCl (7) 10% (NH4)HCO3.

tions are kept in low percentages in order to prevent oxidation, to stabilize the solution and to enlarge their tenability. But if the addition of sulphites is done to a

large extent, the softening action of the solution decreases in a distinct manner. The influence of the adding of sulphites upon the thio-glycolate solutions is shown in Fig. 5. The same effect has been stated by Whitman in measuring the SH-balance of hair. Not only the addition of sulphites works in an unfavourable manner, but also the addition of all kinds of mineral salts decreases the efficiency of cold-wave lotions. Suggestions made in this way, e.g. the addition of large quantities of ammoniumbicarbonate or ammoniumcarbonate to ammoniumthioglycolate solutions, in order to produce cold-wave lotions of low pH-value, as has been suggested in a patent, should therefore be accepted with the greatest precaution. This might also be said about the suggestion to use ammoniumacetate for the same purpose. The influence of the addition of different mineral salts to thio-glycolate solutions is shown in Fig. 6.

There also exist substances, which do not decrease the softening action, but on the contrary are able to increase it, e.g. the addition of rhodanic salts, urea or thiourea. The influence of these additions is shown in Fig. 7. The curves show that their influence is not great, but that same should clearly be stated. An open question is, whether the additions of such substances as ureum will not give disadvantageous effects on the condition

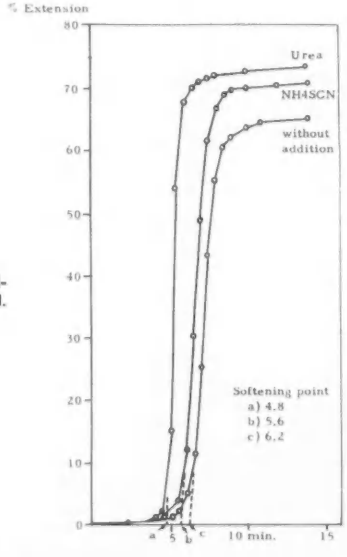

Fig. 7—Influence of the addition of urea NH4SCN.

of the hair. Ureum is a well-known softening medium for unkeratinised protein and there is a danger, that not only the disulphide linkages are broken, but that a further attack might occur on the polypeptide chains, which would not be advantageous for the hair condition. Additions of this kind to sulphite—and thio-glycolate solutions betray themselves by the stickiness of the drying solution. As can be seen, it is extremely necessary to obtain exact information about the influence of additions upon cold-wave lotions on the softening action and their efficiency, before manufacturing cold-wave lotions in order to prevent unfortunate results.

After the breaking up of the salt—the hydrogene and the disulphide combinations in keratineous fibres, there remain in the swollen and softened hair, forces which are still able to retain the consistency of the fibre. It is the influence of the "group three forces" that manifests itself here, an influence the nature of which is not certainly known, but which I do not like to attribute to any chemical intercellular binding. The "group three forces" are evident, if softened fibre is stretched at once. As it can be seen in Fig. 8, the extension of the fibre stops at the point B. There results an equilibrium between the tractive power of the weight and the "group three forces"; an equilibrium which occurs once more by a further increase of weight at the points C and D and finally, breakage of the hair occurs.

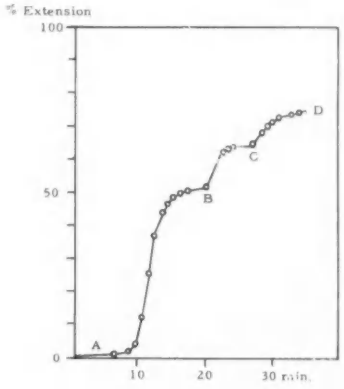

Fig. 8—Demonstration of "group three forces."

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"Our chemists should have stuck to their test tubes!"

How Air Fresheners Work — III

Investigation to find whether or not masking is the *modus operandi* of an air freshener**

R. W. MONCRIEFF*

IN THE preceding section of this article a method of procedure was established for determining if air fresheners work by masking, and a description of the testing of the malodor *p*-chlorthiphenol given.

The next malodor to be used was onions; it was chosen because it is at least the basis of some unpleasant kitchen and restaurant malodors. The onion was finely chopped, mixed with its own weight of water and 5ml of the slurry thus obtained was used in the odour sample flask. Results were as shown in Table XI.

TABLE XI

Osmometer Measurements with Chopped Onion

Odour Increment Pressure (mm Hg)	*Fresh Air Increment Pressure (mm Hg)*	*Total Gauge Pressure (mm Hg)*	*Atmospheric Pressure (mm Hg)*	*Strength of onion odour at Funnel*
15	135	150	757	Clear
8	142	150	757	Faint
7	143	150	757	Very faint

The Odor Threshold Number for this chopped onion in water is evidently greater than $\frac{150 + 757}{7}$ or 130.

Onions and the Air Freshener

Next, the air freshener (3ml) was introduced as before into the odour sample flask, air was blown over this, then the odour sample flask was removed and replaced by one containing chopped onion slurry (5 ml) and air was blown over this; finally, if necessary, the gauge pressure was topped up with fresh air to 150 mm mercury. Results were as shown in Table XII.

The Odor Threshold Number for onion in the presence of the air freshener is $\frac{150 + 762}{15}$ or 76 compared with a value of about 130 for onion alone. It was not found possible to identify a mixture of the air freshener and onion-odorized air which was odorless, but even when the concentration of onion-odorized air was quite high, there was no recognisable smell of onions and the total composite smell was mild. In most of a large number of observations made with onion and the air freshener a mild composite unrecognisable odor is detected.

Onions and Known Masking Agents

The effect of a masking agent was next tried, *p*-dichlorbenzene being used. 2 grams of the dichlorbenzene in powder form was added to the chopped onion in the odour sample flask, J, and tests were made on mixtures of fresh air and air that had passed through this odour sample flask. Results were as shown in Table XIII.

The Odor Threshold Number of onion and *p*-dichlorbenzene is higher than $\frac{150 + 762}{7}$ or 130.

The action of the *p*-dichlorbenzene has not been to reduce the Odor Threshold Number of the onion.

Benzyl acetate which is sometimes used as a masking agent was next tried; the experimental conditions were similar to those used with the air freshener, *i.e.* the benzyl acetate (5ml) was contained in one odour sample flask and the onion slurry (5ml) in another. Experimental results were as shown in Table XIV.

TABLE XII

Osmometer Measurements with Chopped Onion and the Air Freshener

Air Freshener Increment Pressure (mm Hg)	*Odour (onion) Increment Pressure (mm Hg)*	*Fresh Air Increment Pressure (mm Hg)*	*Total Gauge Pressure (mm Hg)*	*Atmospheric Pressure (mm Hg)*	*Strength of odours at Funnel*
30	40	80	150	762	Composite smell not recognisable
30	20	100	150	762	Faint composite odour
30	15	105	150	762	Doubtful, near to threshold
50	15	85	150	762	Very faint composite odour
60	15	75	150	762	No recognisable odour
100	50	0	150	762	Composite odour

* Reprinted from the Perfumery & Essential Oil Record, London, England, Vol. 46 Nos. 6 and 7, June and July 1955, pp. 189 and 227.

** Air Wick

The Odor Threshold Number for onion in the presence of benzyl acetate odorized air is therefore higher than (150 + 760)/7 or 130.

Summary of Results with Onions

The results with onion-odorised air are summarised in Table XV.

TABLE XIII

Osmometer Measurements with Chopped Onion and *p*-Dichlorbenzene

Mask (Dichlorbenzene) Increment Pressure (mm Hg)	*Odour (Onions) Increment Pressure (mm Hg)*	*Fresh Air Increment Pressure (mm Hg)*	*Total Gauge Pressure (mm Hg)*	*Atmospheric Pressure (mm Hg)*	*Strength of odours at Funnel*
115	35	0	150	762	Onion and dichlorbenzene both strong
135	15	0	150	762	Both strong
140	10	0	150	762	Both clear
143	7	0	150	762	Both recognisable

Ethyl Mercaptan

Ethyl mercaptan was chosen for the next series of tests, for the reason that it has an extremely strong and unpleasant odour and that it and its homologues are responsible for many of the bad smells, *e.g.* bowl gases, cooking cabbage and rotting vegetation, and so on, that are sometimes encountered in daily life. Because its odour is so powerful an 0.05 per cent solution in water was first used for test purposes. This was found to be far too strong, and so was 0.005 per cent when it was tried. Finally 0.0005 per cent (5 parts per million) was used and 5ml of this solution was introduced into the odour sample flask and its Odor Threshold Number was determined. Results were as shown in Table XVI.

The Odor Theshold Number for ethyl mercaptan (0.0005 per cent) is evidently $\frac{150 + 755}{35}$ or about 26.

Ethyl Mercaptan and the Air Freshener

Next the air freshener was introduced as before into the odour sample flask, air was blown over this, then the odour sample flask was removed and replaced by one containing the mercaptan solution and air was blown over this until the gauge pressure was 150mm mercury. Results were as shown in Table XVII.

The Odor Threshold Number for 0.0005 per cent ethyl mercaptan in the presence of the air freshener is $\frac{150 + 755}{75}$ or about 12, compared with a value of about 26 for ethyl mercaptan (0.0005 per cent) alone.

TABLE XIV

Osmometer Measurements with Chopped Onion and Benzyl Acetate

Mask (Benzyl Acetate) Increment Pressure (mm Hg)	*Odour (Onion) Increment Pressure (mm Hg)*	*Fresh Air Increment Pressure (mm Hg)*	*Total Gauge Pressure (mm Hg)*	*Atmospheric Pressure (mm Hg)*	*Strength of odours at Funnel*
75	75	0	150	760	Both onions and benzyl acetate strong
138	12	0	150	760	Both clear
50	10	90	150	760	Onion clear
53	7	90	150	760	Onion faint but recognisable

Ethyl Mercaptan and Known Masking Agents

Next *p*-dichlorbenzene was used as a mask for the mercaptan. As in some of the earlier trials two odour sample flasks were used, one containing the mercaptan solution (5ml) and the other the *p*-dichlorbenzene (2 grams). It was found that the *p*-dichlorbenzene had to be present in considerable concentration in order to cover the pervasive mercaptan odour and that this could be achieved satisfactorily only when *all* the air which was used as the diluent for the mercaptan-odorized air had been passed through the odour sample flask which contained the *p*-dichlorbenzene. Experimental results were as shown in Table XVIII.

TABLE XV

Comparison of the Effect of the Anti-Odorant Air Freshener and of Masking Agents on the Odor Threshold Number for Onion-Odorised Air

Mask	*Anti-odorant*	*Odor Threshold Number*
None	None	>130
None	Air Freshener	76
p-dichlorbenzene	None	>130
Benzyl acetate	None	>130

The Odor Threshold Number for ethyl mercaptan in the presence of *p*-dichlorbenzene is $\frac{150 + 764}{30}$ or about 30. If the odour of the mask is also taken into account the Odor Threshold Number is very much higher and is at least 75. When *p*-dichlorbenzene is used with the mercaptan the odour is always strengthened; if the dichlorbenzene is there in sufficient strength to cover the mercaptan odour, then it in itself has a strong smell. There is no indication of odour-pairing between these two odorants.

Phenyl-acetic acid was next tried as a masking agent to cover the 0.0005 ethyl mercaptan solution. Phenyl-acetic acid is crystalline at room temperature and it was used in just the same way as the *p*-dichlorbenzene had been used in the preceding experiment. The results of experiments made with it are shown in Table XIX. The phenyl-acetic acid did not cover the mercaptan smell easily and it was necessary to pass over it, all of the air that was used to dilute the air that had been odorised with mercaptan.

TABLE XVI

Osmometer Measurements with 0.0005 per cent Solution of Ethyl Mercaptan

Odour Increment Pressure (mm Hg)	*Fresh Air Increment Pressure (mm Hg)*	*Total Gauge Pressure (mm Hg)*	*Atmospheric Pressure (mm Hg)*	*Strength of odours at Funnel*
60	90	150	755	Faint but unmistakable of mercaptan
45	105	150	755	Very faint
35	115	150	755	Near to threshold, doubtful
30	120	150	755	Not recognisable
20	130	150	755	Not recognisable

The Odor Threshold Number for the solution of ethyl mercaptan and phenyl-acetic mixed vapours is $\frac{150 + 764}{18}$ or about 51. Thus, the presence of the phenyl-acetic acid has increased the Odor Threshold Number of the very dilute (5ppm) ethyl mercaptan solution from 26 to 51.

TABLE XVII

Osmometer Measurements with 0.0005 per cent Ethyl Mercaptan and Air Freshener

Air Freshener Increment Pressure (mm Hg)	*Odour (Mercaptan) Increment Pressure (mm Hg)*	*Pressure Increment Fresh Air (mm Hg)*	*Total Gauge Pressure (mm Hg)*	*Atmospheric Pressure (mm Hg)*	*Strength of odours at Funnel*
30	120	0	150	755	Faint mercaptan odour
50	100	0	150	755	Faint mercaptan odour
60	90	0	150	755	Very faint
75	75	0	150	755	Near to threshold, doubtful
90	60	0	150	755	Not recognisable

TABLE XVIII

Osmometer Measurements with 0.0005 per cent Ethyl Mercaptan and *p*-Dichlorbenzene

Mask (Dichlorbenzene) Increment Pressure (mm Hg)	*Odour (Mercaptan) Increment Pressure (mm Hg)*	*Fresh Air Increment Pressure (mm Hg)*	*Total Gauge Pressure (mm Hg)*	*Atmospheric Pressure (mm Hg)*	*Strength of odours at Funnel*
90	60	0	150	764	Both mercaptan and mask strong
105	45	0	150	764	Both mercaptan and mask strong
120	30	0	150	764	Mask strong, suggestion of mercaptan
130	20	0	150	764	Mask strong, mercaptan covered
138	12	0	150	764	Mask strong, mercaptan not detectable

Summary of Results with Ethyl Mercaptan (5 ppm solution)

The results with ethyl mercaptan-odorised air are shown in Table XX.

Although the action of the air freshener was to reduce the Odor Threshold Number of the mercaptan to less than one-half of its normal value, both of the masking agents, *p*-dichlorbenzene and phenyl-acetic acid, have raised the Odor Threshold Number—behaviour which is quite characteristic of masking agents. The behaviour of the air freshener is quite dissimilar and is, in fact, exactly the opposite.

B. Detection of Delicate Odours

Any masking agent which produces a more compelling sensation' is likely to interfere with the perception of delicate odours, such as those of herbs and flowers. On the other hand an anti-odorant which has been built up to be capable of counteracting unpleasant odours and which, withall, has itself only a mild unobtrusive smell might be expected to permit the perception of delicate odours in its presence.

Two substances which are used as masks have been compared with the air freshener under such conditions; they were amyl butyrate and benzyl acetate. Both have fairly strong smells and in order to make a fair comparison with the air freshener, solutions of 1.3 per cent in propylene glycol were prepared of each of the two esters. These were thus used under conditions that compared fairly with the air freshener.

The subject sat at a table with eyes closed, and a pleasant smelling substance *and* either the air freshener or a masking agent was held to his nose. He was asked to smell and to answer 'yes' or 'no,' according as to whether he could smell the pleasant odorant or not. The response concerned only the smell of the pleasant odorant; it did not concern that of the air freshener or of the masking agents. Each anti-odorant was held to the subject's nose four times and on one of these occasions, as a reliability check, no pleasant odorant was present. As a further check of reliability, the odorant without mask or anti-odorant was offered three times. Three subjects, A, B, and C, made the observations and the results they obtained are as shown (+ denotes 'yes', — denotes 'no'), in Table XXI. The odorants and anti-odorant or mask were offered in random order so that the subject had no inkling of what to expect.

Points that emerge a consideration of the data in Table XXI are:

(1) The reliability tests are satisfactory; on every one of the 33 occasions that the subject was asked to smell a pleasant odorant that was not in fact present, a negative response was given.

(2) The reliability tests in the positive sense were also satisfactory, *e.g.* on all of the 33 occasions that the subject was asked to smell a pleasant odorant when no anti-odorant was present, a positive response was given.

(3) When the anti-odorant air freshener was present together with the pleasant odorant, positive responses were given on 21 out of 33 occasions, *i.e.* on 64 per cent of the possible times.

(4) When the masking agent amyl butyrate (1.3 per cent solution) was present together with the pleasant odorant, positive responses were given on 7 out of 33 occasions, *i.e.* on 21 per cent of the possible times.

(5) When the masking agent benzyl acetate (1.3 per cent solution) was present together with the pleasant odorant, positive responses were given on 9 out of 33 occasions, *i.e.* on 27 per cent of the possible times.

(6) Whereas the masking agents amyl butyrate and benzyl acetate prevented the perception of a pleasant odour on 79 per cent and 73 per cent respectively of the occasions, the anti-odorant air freshener prevented it only 36 per cent of the occasions.

TABLE XIX

Osmometer Measurements with 0.0005 per cent Ethyl Mercaptan and Phenyl-Acetic Acid

Mask (Phenyl-acetic-acid) Increment Pressure (mm Hg)	*Odour (Mercaptan) Increment Pressure (mm Hg)*	*Fresh Air Increment Pressure (mm Hg)*	*Total Gauge Pressure (mm Hg)*	*Atmospheric Pressure (mm Hg)*	*Strength of odours at Funnel*
75	75	0	150	764	Both mercaptan and phenyl-acetic acid clear
100	50	0	150	764	Both mercaptan and phenyl-acetic acid clear
115	35	0	150	764	Both clear
120	30	0	150	764	Mercaptan odour detectable, phenyl-acetic acid clear
132	18	0	150	764	Faint smell reminiscent of almonds and onions

TABLE XX

Comparison of the Effect of the Anti-Odorant Air Freshener and of Masking Agent on the Odor Threshold Number for Ethyl Mercaptan-Odorised Air

Mask	*Anti-odorant*	*Odor Threshold Number*
None	None	26
None	Air Freshener	12
p-dichlorbenzene	None	30
Phenyl-acetic acid	None	51

Conclusions

1. The presence of the air freshener reduces the Odor Threshold Numbers of:

(*a*) *p*-chlorthiophenol which has a nauseous burnt smell from 130 to 50;

(*b*) onion from 130 to 76.

(*c*) ethyl mercaptan (0.0005 per cent solution) from 26 to 12.

pleasant odours that are quite overwhelmed by the powerful odours of masking agents.

TABLE XXI

Reactions to Pleasant Odorants in the Presence of Masking Agents or of the Air Freshener

Pleasant Odorant	*Anti-odorant or Mask*	*Responses (ability or inability to smell the pleasant odorant)* of Subject A	of Subject B	of Subject C	*Total 'yes'*
Dried thyme	None	+ + +	+ + +	+ + +	9
Dried thyme	Air Freshener	+ + −	− − −	+ − +	4
None	Air Freshener	− − −	− − −	− − −	0
Dried thyme	Amyl butyrate 1.3%	−	− − −	− − −	0
None	Amyl butyrate 1.3%	−	−	−	0
Dried thyme	Benzyl acetate 1.3%	+ − +	−	−	2
None	Benzyl acetate 1.3%	−	−	−	0
Caraway Seeds	None	+ + +	+ + +	+ + +	9
Caraway Seeds	Air Freshener	+ + +	− + −	− + +	6
None	Air Freshener	−	−	−	0
Caraway Seeds	Amyl butyrate 1.3%	− − −	− − −	− − −	0
None	Amyl butyrate 1.3%	−	−	−	0
Caraway Seeds	Benzyl acetate 1.3%	− − −	− − −	− − −	0
None	Benzyl acetate 1.3%	−	−	−	0
Vanilla pods	None	+ + +	+ + +	+ + +	9
Vanilla pods	Air Freshener	+ + −	+ + +	− − +	6
None	Air Freshener	−	−	−	0
Vanilla pods	Amyl butyrate 1.3%	− + −	− + −	− + −	3
None	Amyl butyrate 1.3%	−	−	−	0
Vanilla pods	Benzyl acetate 1.3%	− − −	− + −	− + +	3
None	Benzyl acetate 1.3%	−	−	−	0
Mimosa flower	None	+ + +	Not tested	+ + +	6
Mimosa flower	Air Freshener	+ + +	Not tested	+ + −	5
None	Air Freshener	−	Not tested	−	0
Mimosa flower	Amyl butyrate 1.3%	+ − +	Not tested	+ + −	4
None	Amyl butyrate 1.3%	−	Not tested	−	0
Mimosa flower	Benzyl acetate 1.3%	+ − +	Not tested	+ + −	4
None	Benzyl acetate 1.3%	−	Not tested	−	0

The characteristic action of the air freshener is to *reduce* the Odor Threshold Number of a malodor.

2. The masking agents *p*-dichlorbenzene, musk ketone, heliotropin, and phenyl-acetic acid, have all been found to raise the Odor Threshold Numbers for the same malodors. This behaviour is characteristic of a masking agent which produces a more compelling sensation. The more compelling nature of the sensation is reflected in the higher Odor Threshold Number.

3. In respect of its effect on threshold values the action of the air freshener is exactly opposite to that of masking agents.

4. Amyl butyrate and phenyl-acetic acid which are typical masking agents (even when diluted with 75 parts of an odorless glycol) allowed the recognition of delicate odours only 21 per cent and 27 per cent respectively of the possible occasions. The air freshener allowed such recognition, under exactly comparable conditions, of the delicate odours on 64 per cent of the possible occasions.

5. The mild unobtrusive nature of the used air freshener smell allows the perception of many mild and

6. The air freshener is not a masking agent and its odour-counteraction properties are not due to masking.

How Business Men Make Decisions

IN the August 1955 issue of Fortune magazine, a writer states that most executives agree that there are no rules for the formulation of judgment. If you were to ask an executive panel to explain how they make decisions, you would hear a candid avowal of ignorance. The test of a business decision is, of course, its effectiveness in making money. To raise profits the executive must have an optimistic outlook and his business must be able to absorb some margin of error. It is evident from what executives say that they make their important decisions subconsciously. The executives must find the problems and alternatives. The combination of these creative acts, together with the act of judgment, defines his prime function.—*NWDA News.*

Theory of Emulsion Stability

Applications for maximum and for minimum stability

HAROLD L. GREENWALD*

AN emulsion is a system consisting of one liquid phase dispersed as droplets in another liquid phase. Two types of emulsions are possible with a given pair of incompletely miscible liquids—A dispersed in B and B dispersed in A. Water as one phase and some organic compound, referred to as an oil, as the other phases are by far the most common constituents of emulsions. The present discussion will be confined, principally, to oil-in-water emulsions.

Introduction

Since most of you are more familiar with the preparation of emulsions than I am only a few comments will be made on this aspect of emulsions. The energy input in the formation of an emulsion is the energy required to form the new interface and is given by:

$$E = \gamma_i A \qquad (1)$$

where γ_i is the interfacial tension and A is the area of interface formed. If the spherical droplets formed are all of equal radius, r, and if the discontinuous phase volume is V this becomes:

$$E = \frac{3\gamma_i V}{r} \qquad (2)$$

Thus the energy required to form a liter of emulsion containing 10 per cent of the discontinuous phase in droplets 0.1 micron in diameter where the interfacial tension is 1 dyne per centimeter (or erg per square centimeter) is 3×10^7 ergs or 0.7 calories. This value is quite low compared with the energy necessary to heat the emulsion one degree.

Our usual concern is with the stability of emulsions. In some applications we wish to have maximum stability and in others, where emulsions are undesirable, minimum stability. A stable emulsion is one which exhibits (1) no sedimentation or creaming of the discontinuous phase, (2) no aggregation or flocculation of the droplets and (3) no coalescence of droplets. Borrowing a term from those studying the structure of liquids this may be rephrased as: A stable emulsion has an unchanging droplet radial distribution function.

In emulsions which are not perfectly stable it is quite evident that the rates of creaming, aggregation and coalescence are interdependent. Creaming decreases the average interparticle distance which should then lead to changes in the rates of aggregation and coalescence. Or, coalescence produces larger particles which will then increase the rate of creaming provided the densities of the two phases are different, etc.

In this discussion the factors affecting creaming will be covered first. We will see that the principal determinants in creaming are particle size, the difference in density between the phases and the viscosity of the continuous phase. Then an investigation of the forces between oil droplets will show that there are both forces of attraction and forces of repulsion present and that the interaction between particles depends on the sum of these. The behavior of the emulsion with respect to flocculation and coalescence will depend on the sum of the corresponding energies. These energies will depend on the charge on the emulsion droplets, the concentration and valence of the ions present, the particle size and what seems like a host of other factors. In a final section specific effects of surface active agents will be discussed and it will be found, alas, that most of the equations and graphs used throughout the discussion cannot be trusted quantitatively but are in qualitative agreement with observations.

Sedimentation

The sedimentation rate of a single droplet is given by Stokes Law as:

$$u = \frac{2gr^2(d - d')}{9\eta} \qquad (3)$$

where:

- u = rate of fall of droplet
- g = gravitation constant
- d = density of oil
- d' = medium (roughly the emulsion) density
- η = viscosity of medium (roughly that of emulsion
- r = droplet radius

This law is applicable to dilute emulsions although even here there is a small uncertainty in the significance of the term "droplet radius" as will be seen in the subsequent discussion. In the case of concentrated emulsions, including the cream of dilute emulsions, the exact form of the equation will be changed. Nonetheless the qualitative dependence of the sedimentation rate on the variables will probably be maintained.

* Rohm & Haas Co. Reprinted from the Journal of the Society of Cosmetic Chemists Vol. VI No. 3, June, 1955 pp 164. Presented at the first seminar of the Society, September, 1954.

Ordinarily one is interested in the mass rate of creaming or, if you will, the motion of the center of gravity of the oil phase. In the absence of flocculation and coalescence the system can be described as consisting of n_i droplets of radius r_i having a mass $^4/_3\pi r_i^3 d$. The velocity of the center of gravity of oil in an emulsion in a long tube, will be:

$$u = \sum_i \frac{4}{3U} \pi r_i^3 n_i u_i \qquad (4)$$

where V is the volume of the oil in the system

$$= \sum_i (^4/_3)\pi r_i^3 n_i$$

and the velocity of a droplet of radius r_i is u_i. Substituting for u_i its value from equation 3 gives as the mass creaming rate:

$$\bar{u} = \sum_i \frac{8\pi}{27\eta V} g n_i r_i^3 (d - d') \qquad (5)$$

Thus, qualitatively the mass rate of creaming is strongly dependent on the particle size and is also a function of the difference in density between the oil and the medium and an inverse function of the viscosity of the medium. Certain assumptions involved in equations 3 and 5 mean that these relationships will be only approximate when applied to real emulsions.

The viscosity of the emulsion is a rather weak function of the volume fraction (ϕ) of the disperse phase at low concentration but becomes a strong function at high oil concentration. At a low concentration of oil phase the viscosity will be approximately that of water and if the oil is in droplets 0.1 micron in radius and has a density of 0.8 the rate of creaming will be from equation 3.

$$u = \frac{2 \cdot 980 (10^{-5})^2 (0.8 - 1.0)}{9 \cdot 0.009} = -5 \cdot 10^{-7} \text{ cm./sec.}$$

or $2 \cdot 10^{-3}$ cm./hr. For a 1 micron drop this becomes 0.2 cm./hr. At higher concentrations of oil phase a modified Einstein equation (1) or a Mooney type equation (2) can be used to compute the viscosity.

It was assumed in the foregoing that the viscosity of the outside phase did not change with time. If some slowly diffusing material is present and not at equilibrium with respect to its distribution between the phases then the viscosity may change with time as the diffusion occurs. In the same way a slow reaction occurring in the system may affect stability with respect to creaming. Since these time effects are not instabilities peculiarly due to emulsion properties they will not be considered further.

We have been discussing the rate of sedimentation in a very long tube. Let us now turn to the distribution of emulsion which has stood in a vessel for a very long time. This sedimentation equilibrium is a special application of the general Boltzmann equation. The concentration of particles of disperse phase with a radius r_i at a height h is given by:

$$n_h = n_0 e^{-4\pi r_i^3 (d - d')gh/3kT} \qquad (6)$$

where:

n_0 = concentration at bottom of tube
g = gravitation constant
k = Boltzmann's constant
T = absolute temperature

This distribution is illustrated from mono disperse particles in Fig. 1. The total concentration of disperse phase at height h can be obtained by summation over all of the particle sizes. If the particle size distribution is known this summation can probably be performed analytically. It is quite clear, however, that the smaller the density difference between the two phases and the smaller the particle size the less steep is the composition gradient in the emulsion.

Double Layer Theory

Ideas developed by the early part of this century have dominated our analysis up until this point. In discussing flocculation and coalescence the work of Verwey, Overbeek and others since about 1935 will provide the principal guides (3). From the comparatively simple questions of the mechanical properties of the droplets and the medium we go to the complex chemical and electrical interactions. In this we will indulge in a bit of double talk for the discussion will be about double diffuse—double layer—double particle interactions.

Fig. 1—Diagrammatic representation of the distribution of uniformly sized particles in a gamboge sol (Perrin). (Wieser, *Colloid Chemistry*, p. 202.)

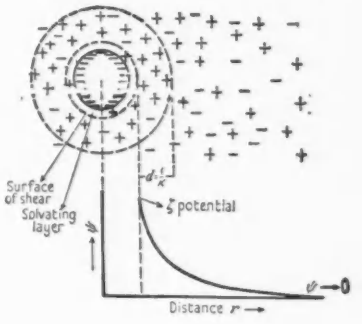

Fig. 2—The electrokinetic potential (ζ) and the electrical double layer. (Alexander and Johnson, *Colloid Science*, p. 297.)

In general the positive and negative ions present in an emulsion will distribute themselves between the oil phase and the water phase so as to put a charge on the oil droplets. That is, there will be a higher concentration of ions of one charge than of the other in the oil. This is illustrated diagrammatically in Fig. 2. In this particular case the negative ions are in excess in the oil phase. Unfortunately the scale is too small to show a distribution of the negative charges of decreasing concentration toward the center of the droplet. The first layer around the droplet, the "solvating layer," consists of strongly bound water molecules, hydrogen atoms pointed toward the oil since the water dipoles will orient in the charge field, and excess positive ions strongly held by the negative charge on the oil. This layer remains bound to the droplet as the oil moves through the water and having an excess of positive ions it reduces the effective net charge of the drop. It is this net charge which is effective in electrokinetic experiments such as electrophoresis measurements. Continuing out toward the body of the

water phase distant from the droplet, it is seen that the concentration of the positive ions decreases and that of the negative ions increases much like in Fig. 1. This ion atmosphere is the "diffuse double layer" in the water phase. It is often convenient to consider instead of the double layer itself a shell of charges which would have the same effect as the double layer. What is referred to as the thickness of the double layer is the distance $d = 1/k$ from the droplet to this shell as illustrated (k^2 is proportional to the ionic strength of the solution divided by its dielectric constant.). It should be noted that the same type of diffuse double layer is present in the oil phase.

Below the diagram in Fig. 2 is a plot of electrical potential, the energy required to bring an electron from infinity to the given point, as a function of distance from the center of the droplet for the region outside the surface of shear. The shape of the potential curve is determined by the ion distribution discussed above. The difference in potential between the surface of shear and a distance point in the water phase is known as the zeta potential or electrokinetic potential. Figure 3 is a plot of the entire potential-distance curve, with the direction of increasing potential reversed when compared with Fig. 2. The difference in potential between the interiors of the water and oil layers is denoted by ΔV and that portion of the potential difference due to dipole orientation and charges at the interface by chi. It should be noted that most of the potential drop occurs in the oil phase.

Implied above was that the water was pure and the only ions present were those from the ionization of water. Although the relative distances will be changed the qualitative picture is unchanged if other ions, say a salt, are added to the water as long as they are not surface active. In the absence of surface active ions to a good approximation ΔV depends only on the species and not on the concentration of the ions present.

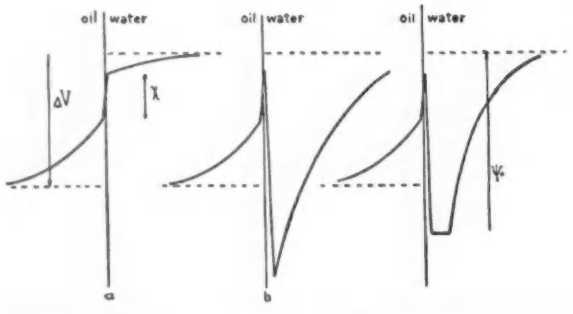

Fig. 3—Potential at an oil-water interface: (a) In the absence of surface-active ions. (b) After addition of soap ions, in solution of very low ionic strength. (c) In the presence of soap ions and a large amount of salt. (Van den Tempel, ref. 3.)

Upon the addition of a surface ion the situation changes quite radically as indicated in Fig. 3b and Fig. 3c. The former is the potential curve in the absence of excess salt and the latter in its presence. These curves are both based on the quite artificial assumption that the distribution of the ions in the bulk phases is not changed by the presence of the surface active ion. The scales for a, b, and c in general should be different so comparisons between them are only qualitative. Adsorption of the surface active ion at the interface has produced a deep minimum in the potential curve. These

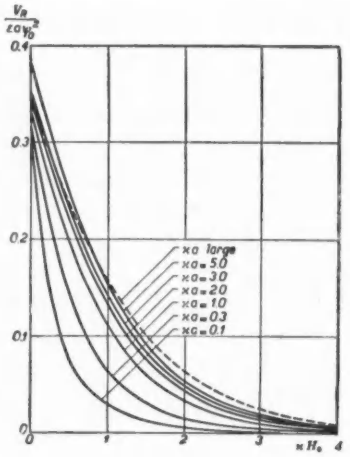

Fig. 4—The potential energy of repulsion between two spherical particles for different values of a. (Overbeek, (Kruyt), Colloid Science.)

adsorbed ions produce a surface change density on the droplet which is much greater than the original one and, in the case illustrated, is neutralized almost entirely by the increased double layer charge on the aqueous side of the interface. In the presence of an excess of other ions those of charge opposite to that of the surface active ions, the counter ions, nestle in among the surface active ions producing a thin layer of uniform potential ψ_0 with respect to the bulk water phase.

What are the forces acting between two charged droplets and their diffuse double layers as the droplets move toward each other? In the usual cases in emulsions there are enough ions in the water phase, the counter ions from the soap, so that the double layer thickness, $1/k$, is less than 0.01 microns which is usually small compared to the droplet radius, r. The problem of the electrical forces acting is not amenable to a complete analytical solution but good approximations are available. These show that in so far as the electrostatics are concerned the droplets will always repel each other as indicated in Fig. 4. The a in this figure is our r, the droplet radius, and H_0 is the distance between the droplets (so the horizontal axis is in units of double layer thickness). V_R is the repulsive electrical potential between the two droplets, and when ψ_0 is small

$$V_R = 4.62 \times 10^{-6} \frac{r}{v^2} \gamma^2 e^{-\kappa H_0} \qquad (7)$$

where v is the valence of the counter ions. γ is a not too simple function of Z $(= v\varepsilon\psi_0/kT)$ where ε is the electron charge.

$$\gamma = \frac{e^{Z/2} - 1}{e^{Z/2} + 1} \qquad \begin{matrix} (= 0 \text{ when Z is small}) \\ (= 1 \text{ when Z is large}) \end{matrix}$$

Thus it is seen that the solution of the electrostatic problem gives a potential which is always repulsive and which is exponential in H_0, the distance between the particles.

Observation has shown that emulsions flocculate and coalesce and, probably even earlier in our experience, that gases can be condensed to liquids. For these to oc-

cur there must be attractive forces acting between neutral molecules. These universal long range attractive forces, responsible for deviations from ideal gas laws are called van der Waals' forces. Fritz London, in 1932, gave a quantum mechanical explanation of the forces of attraction between nonpolar molecules. One interpretation of this quantum mechanical theory is as follows:

If one were to have an instantaneous picture of the nuclei and the electrons in a nonpolar molecule, say carbon tetrachloride, one would observe a special distribution of the electrons and the positive nuclei such that the center of gravity of the positive and negative charges were separate. Thus, in this instantaneous picture the molecule is not nonpolar but has a dipole—a positive and a negative end. Since electrons move very rapidly this picture changes rapidly and with it the magnitude and orientation of the dipole. In the case of a nonpolar molecule the superposition of the series of pictures for any appreciable time gives a zero dipole. However, to a neighbor molecule, which is quite as shifty an entity itself, this instantaneous nonzero dipole is observable. The momentary dipole in the first molecule induces in the second a dipole in the opposite direction which is thus attracted to the first dipole. In this way a force of attraction is engendered in the entire system. The magnitude of the force between the molecules depends on the polarizability, or ease with which a dipole is induced, of the molecules and some natural frequencies of the molecules. Upon the latter depends the ability of an individual pair to "jitter" together and thus maintain this temporary bond for a long time.

When two droplets are in collision or close together, that is when distance between them is small compared to their radii the potential energy of the London-van der Waals attraction is given approximately by

$$V_A = -\frac{1}{12} A \frac{r}{H_0} \qquad (8)$$

in which A is a constant taking into account the polarizability and jitter factors. It is to be noted that the attraction potential is, under these circumsances, inversely proportional to the first power of the distance between the droplets. It is only when dealing with very large droplets, when compared with molecules, that the dependence on distance is of so low an order. This comes about because of cooperation among the induced dipoles near the quite flat, compared to molecular radii ot curvature, collision regions of the droplets.

The total potential energy of the interaction is given by the sum

$$V = V_R + V_A \qquad (9)$$

This summation is shown diagrammatically in Fig. 5

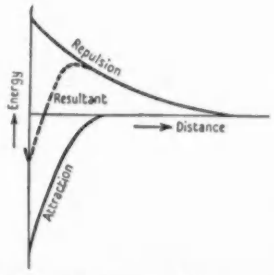

Fig. 5—The variations of potential energy of two colloidal particles with separation. (Alexander and Johnson, *Colloid Science*, p. 116.)

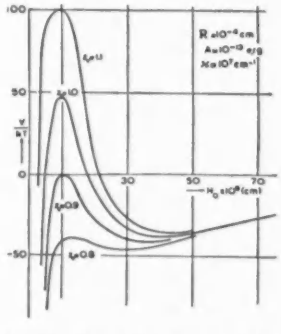

Fig. 6—Potential energy of interaction for two identical oil globules, as a function of the distance between the surfaces, at low values of the surface potential. (Van den Tempel, ref. 3.)

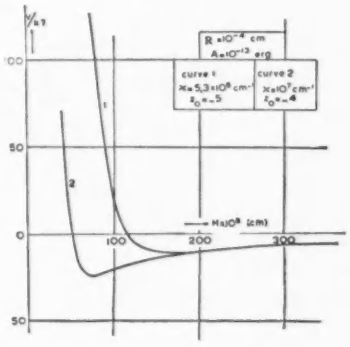

Fig. 7—Secondary minimum in potential energy curve at fairly large interparticle distance. (Van den Temple, ref. 3.)

for one set of values of the various parameters. A small set of summation curves for different values of the surface potential ψ_0 for a 1 micron radius particle and assuming reasonable values for the other parameters is given in Fig. 6.

Inspection of Fig. 6 shows that in the system involved one can have two types of interactions. Where ψ_0 is below a certain value, 23 millivolts in this case, the barrier in the potential *vs.* interparticle distance curve always lies below kT. There is then enough thermal energy present to allow droplets to come right together at a rapid rate. This exemplified by the two lower curves. It should be noted that at still smaller values of Z and thus ψ_0, there need be no hump in the curve so that the droplets will be drawn together regardless of thermal energy. In the other curves it is seen that the hump corresponds to V large with respect to kT thus keeping the particles from getting closer together than roughly 20 Å. In this case the particles will tend toward the minimum energy in the accessible region at a separation af about 40 Å.

Flocculation and Coalescence

The nature of the processes taking place in coalescence and flocculation are now clearer. If the energy *vs.* distance curve is like the upper one in Fig. 6 stable but moderately reversible flocculation will occur with about 45 Å. being the most popular interparticle distance and with very few particles ever getting enough energy to surmount the hump and irreversibly floc and coalesce. If the second curve best describe the system the reversible flocculation is less easily reversed, the interparticle distances smaller, and the rate of traversal of the barrier on the path to coalescence is greater. In the case of the bottom curve coalescence should be quite rapid unless some other factor such as a rigid interfacial film prohibits this. If such is the situation a stable irreversible floc will form. If the double layer is thicker the minimum for flocculation will be moved further out as is seen in Fig. 7. Curve 2 has the same double layer thickness but a higher ψ_0 than the curves in Fig. 6 and curve 1 has roughly twice the double layer thickness as the others. In the last case the minimum in the po-

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tential energy curve is at a position in which the droplets are in the neighborhood of 200 Å, apart. In applying the double layer theory to emulsions, it is important to note that the results expected from changes in the variables will only be in qualitative agreement with experiment because of other factors to be discussed later.

Next comes the question of how fast will flocculation and coalescence occur in the several cases given above. If there were no forces of attraction or repulsion between the particles ($V = 0$) the collision frequency is given to a good approximation by Von Smoluchowski as

$$G_{V=0} = \frac{8n_0kT}{3\eta} \qquad (10)$$

If irreversible flocculation or coalescence were to occur under these conditions the time, $t_{1/2}$, for the number of particles to be halved would be

$$t_{1/2} = \frac{3\eta}{4kT\, n_0} \qquad (11)$$

which for water at room temperature is $(2 \times 10^{11})/n_0$. If, as before, a 10 per cent oil in water emulsion with particle sizes 0.1 and 1 micron are assumed the corresponding $t_{1/2}$ values are 10^{-3} sec. and 1 sec. Thus, unless there is a goodly barrier to flocculation it can be expected to occur quite rapidly unless n_0 is small (i.e. very dilute emulsion or very large particles) or η has been increased greatly as by the addition of a thickener. If stability for a period of several months, say 10^7 seconds, is desired the barrier would have to have a 10^7 to 10^{10} fold effect on the time of coagulation.

When there is an interaction between the particles the factor W, by which the interaction changes the collision frequency, is given by:

$$\frac{G_{V=0}}{G_V} \equiv W = 2r \int_{2r}^{\infty} e^{V/kT} \frac{dH_0}{H_0^2} \approx \frac{1}{2kr} e^{V_{max}/kT} \qquad (12)$$

where V_{max} is the maximum value in the potential energy of interaction *vs.* distance curve as in Fig. 6. The stability problem then becomes one of obtaining a high value for W. Thus, the effects of particle radius, concentration and valence of electrolyte (as k), surface potential ψ_0, and van der Waals' constant A are seen. Equation 10 showed that the collision frequency increased with the concentration of droplets, n_0, and was inversely proportional to the viscosity, η.

Figure 8 indicates the effects of the surface potential ψ_0 and of the valence, Z here, and concentration of electrolytes on the stability. Each line is a boundary with the stable region, with high W, left and top, and the unstable region, with low W, right and bottom. Thus, as was implied before, the higher the surface potential the greater the stability. The Schulze-Hardy rule is seen here in that the higher the valence the further the displacement of the boundary to lower concentrations (n.b. the concentration scale is logarithmic). These effects came about because of the change in the repulsive energy term V_R. A higher surface potential and a lower concentration and charge of ions (i.e. higher $1/k$, double layer thickness) increase the repulsive energy and thus W. It is also seen by comparing the dash and solid lines that increasing the van der Waals' attraction constant A decreases the stable region area.

Boundary lines drawn in Fig. 8 are quite typical of those for any stability factor W and any particle size. For a higher stability than the value for which Fig. 8 is

true the curves will be displaced upward and to the left (very little for large particles). To predict effects of particle size on stability would require a higher order of approximately of V_R and V_A than can easily be made.

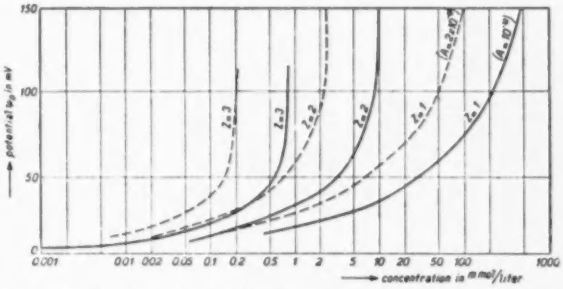

Fig. 8—Condition of limiting stability (flocculation values) for two values of the London-van der Waals constant A and the valencies z=1, z=2, and z=3. Left and top=stable, right and bottom=unstable. (Overbeek (Kruyt), *Colloid Science*, p. 304).

When the particles are very small increasing the particle size r increases the stability but for particles in the usual emulsion range theoretical predictions are difficult.

Conclusion

Up to now hardly any mention has been made of specific effects due to emulsifying agents. Starting again from the beginning, equation 2 tells us that for a given energy input in making the emulsion the particle radius is proportional to the interfacial tension. Thus an emulsifier which decreases the interfacial tension decreases the average particle size under these conditions. Since equation 5 tells us that the mass rate of creaming depends strongly on the radius, thus can be a very important effect. At ordinary concentration the amount of emulsifier present is enough to make but small changes in the density of either phase or in the viscosity of the discontinuous phase. High polymer water soluble materials may have an appreciable influence on the viscosity of quite concentrated emulsions.

In striving to get a low creaming rate, one often uses a colloid mill to get a very small particle size. If the stability to flocculation and coalescence is dependent on the emulsifier layer on the droplets the use of the mill will not give the expected result in all cases. Assuming an emulsifier of molecular weight 300 which covers 30 square angstroms per molecule at an interface, the weight per cent of emulsifier required to give a continuous interfacial film in a 10 per cent emulsion is given in the accompanying table:

Radius Microns	% Emulsifier Required	Creaming cm./mo.
1	0.05	150
0.1	0.5	1.5
0.01	5	0.015
0.001	50	0.00015

Oil density = 0.8; emulsifier M.W. = 300; area = 30 A.²/molecule.

For stability over a very long term the 0.01 micron size with roughly 5 per cent emulsifier would seem to meet most requirements. If the particle size distribution is wide it should be noted that the mass creaming rate will be governed by an average particle size very strongly influenced by the radius, as in equation 5, whereas the

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emulsifier requirement will depend on the surface average particle size. The former will be larger than the latter with the disparity increasing with the coarseness of the distribution. Thus to be sure that there are no droplets as large as 0.1 microns it may be necessary to have a surface average size smaller than 0.01 microns in which case the emulsifier requirement could become quite high.

In Fig. 3b it was seen that the absorption of emulsifying agent at the oil-water interface is the primary factor in determining the charge on the oil drop and its surface potential. Thus by equation 7 it is the major source of the repulsive potential between particles. Here the droplet radius is a factor as it is in the force of attraction given by equation 8. Although its evaluation is obscure the van der Waals' constant A in equation 8 depends on properties of the atoms and molecules interacting so will be dependent in considerable measure in the interfacial film. The value of ΔV in Fig. 3 will also be influenced by the presence of the emulsifier since the surface active ion will normally be much more soluble in the oil phase than are other ions.

The bump in the total potential energy curve was predicated on a surface potential which was not a function of H_0, the distance between the particles. This, it seems to me, is where the picture breaks down somewhat. Early work by Harkins (4) and others indicated that emulsion stability is a function of the rigidity and film viscosity of interfacial films. Recent work by Cockbain and McRoberts (5) offers evidence that under some conditions the ease of displacement of the interfacial film into the discontinuous phase is of primary importance in stability. Some commercial emulsifiers specifically tailored for use in hard water yield emulsions which are more stable in the presence of calcium ion than in sodium ion solutions of the same concentration—apparently violating the Schulze-Hardy rule. It also was difficult for Van den Tempel (3) to explain rates of flocculation and coalescence in terms of his estimates of the surface potential. His high values for ψ_0 would lead to very low rates of crossing of the barrier.

It seems to me that the next development in the theory must take into account that the surface charge is borne by surface acive ions. When two droplets approach there will be forces acting on these ions tending to drive them from the proximate region on the droplets. If the ion concentration on the droplet surface in the collision region is decreased in this way the surface potential will also go down and the potential energy (V)-distance (H_0) curve will correspond to a path which crosses over from one constant ψ_0 line to another in Fig. 6. In this picture the ability of surface active ions to move along the interface to a distant region on the droplet will be of importance in some cases, in others the displacement of these ions into the droplet will be energetically easier and in still others neither will readily happen. These possibilities then enable the theory to explain the observations of Harkins, Cockbain, Van den Tempel, and others.

Credits

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(4) Harkins, W. D., "The Physical Chemistry of Surface Films," New York, Reinhold Publishing Co. (1952).
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Drug Store Still Monarch; Reigns Over Toiletry Outlets

THE drug store still leads all other toiletry and cosmetic outlets, despite food and department stores and house-to-house sellers, according to results of a survey made by the Dell Publishing Co. On 41 of 57 products covered in the study, the drug store is the purchase place for most buyers; on most of the other 16 products, the drug store is a close challenger to the leaders.

The study was conducted among 889 women readers of Dell Modern Group magazines. It shows that although there have been impressive gains by other outlets for some products, the drug store is the one which is either on top or near the top as a source for every one of the 57 toiletry items under consideration.

The department store, once a leading competitor, is now the chief source for only one product—cream rouge.

Food stores account for only 3 of the 16 products which do not have the drug store as the main source of supply—cleansing tissue, toilet soap, and tooth paste.

Four of the products—skin freshener, hair brushes, bubble bath and liquid non-spray deodorant—are sold chiefly by house-to-house salesmen.

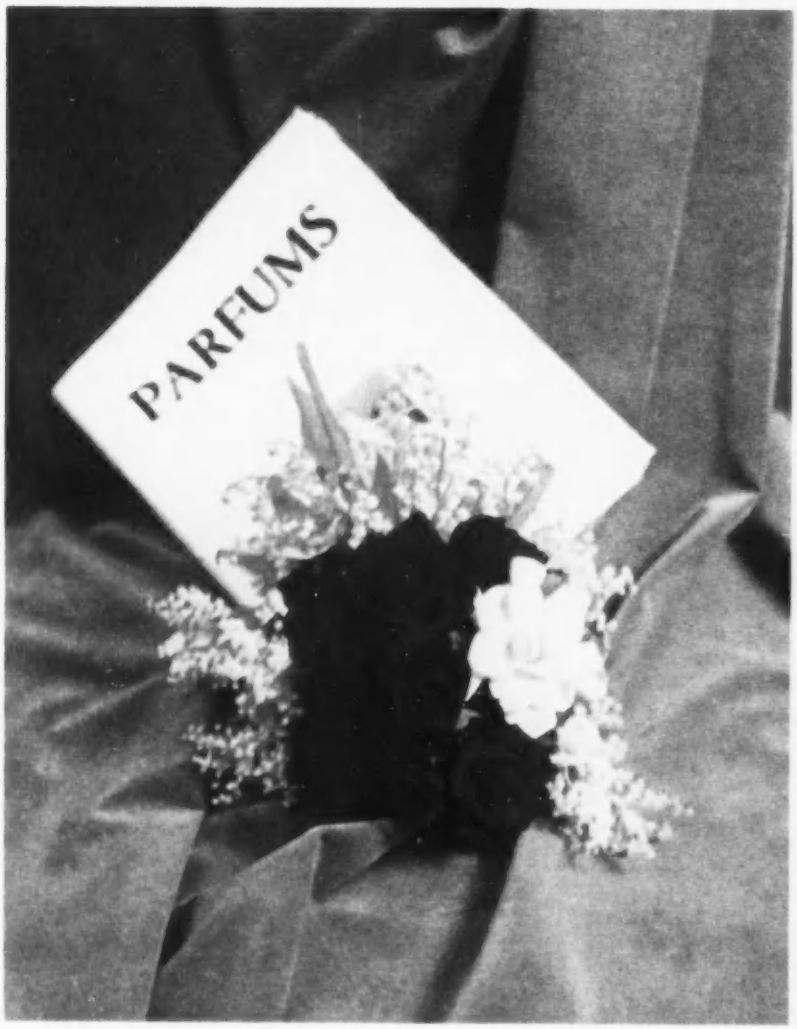
The remaining 8 products out of the 16—eyebrow pencils, cake mascara, eye shadow, bob pins, hair curlers, pin curl clips, nail polish, and nail polish remover—are purchased primarily through variety stores.

Mail order retailers and beauty shops showed up as relatively minor factors in the market. So though the drug store might not lead in sales of all products, it is the only source which is strong with all cosmetic and toiletry items.

The rise of house-to-house selling is probably the most serious threat to the drug stores at present. According to the survey they account for 18.1% of lipstick sales . . . 17.9% of the face cream . . . 8% of the cream shampoo . . . 25% of bath salt buyers . . . and 15.4% of the perfume buyers.

In spite of the reports on the food store's invasion of the toiletry field, the study suggests that it is a significant outlet for only a few of the 57 items. For example, 60.2% of home permanent kits are purchased in drug stores, as compared with 17.9% in food stores; and 45.9% of shampoo buyers use the drug store, while 26.6% get this product from the food store. Toilet soap, however, is still sold chiefly through the food store, which accounts for 76.7% of the sales on this item.

Despite the stepped-up competition, the drug store has actually increased its sale on 14 of 49 products over the last two years. It now holds 40.9% of the lipstick buyers, as compared with 38.9% two years ago; and 60.7% of tooth powder buyers instead of the 53% in 1953. Moreover, the drug store has replaced the department store as the most important fragrance product outlet. It now leads in perfume, liquid cologne, stick cologne and toilet water sales.



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Absolute Oakmoss	A good grade of oakmoss made from selected French moss — great purity — for standard perfumes.
Resinoid Oakmoss #1	Made with the same raw material used for our Absolute Oakmoss A but less refined — for colognes.
Resinoid Oakmoss #2	The same character found in our Resinoid No. 1 but with more impurities and stronger. This quality is recommended *only* for soap.
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NEW PACKAGING and PROMOTIONS

FABERGÉ

Fabergé's couturier perfumes are now sold in a new imported bottle—a square-cut crystal flacon with a large

Aphrodisia

gold-edged crystal stopper which is set into an embossed, velvet-lined white box. The perfumes, made, bottled and sealed in France, are available in four fragrances: Aphrodisia, Woodhue, Tigress and Act IV. The prices are $10.50, $24 and $45.

HAZEL BISHOP

A 2-in-1 vanity, which gives the consumer two lipstick shades in a plastic purse kit, is offered by Hazel Bishop. One dozen assorted kits for blondes, redheads, brunettes and brownettes are presented as a group in a counter display. The $2 value sells for $1.25.

COSMAIR

Cosmair, Inc., manufacturers of L'Oréal products, has recently put on the market for professional use a new creme hair coloring solution called Imédia Petite. The red, white and blue color theme of the entire L'Oréal line is used in the package.

YARDLEY

Yardley has re-introduced two Lavender sachet products—sachet pillows and sachet-diffuser for scenting linens, lingerie and clothes. The sachet pillows are packaged three in a box, each individually sealed in cellophane to preserve the strength of the fragrance. The box is $2 plus tax. The Yardley Lavender sachet set, containing a bottle of liquid sachet and a diffuser, sells for $1.50 plus tax.

CHARLES OF THE RITZ

A new lubricating cream for dry skin is the latest beauty preparation from Charles of the Ritz. Called Special Formula Emollient, the cream is designed to supplement the natural oils of the skin which decline with age. Its basis is a combination of vegetable, mineral and organic oil groups. The cream sells at $5 for two ounces, $8.50 for four ounces.

CHANEL

Chanel is now packaging its talcum powder in a new lightweight plastic bottle. The package, named Chanel

Chanel Talc

Talc (voyage), is available in all five of the Chanel perfume fragrances: No. 5, Bois des Iles, Russia Leather, No. 22, and Gardenia. The opaque white squeeze-bottle is said to be unbreakable and spillproof. Four ounces of the powder in the new bottle costs $2.50 plus tax.

DOROTHY GRAY

Deodorant Atomist by Dorothy Gray is packaged in a round glass bottle with blue plastic coating, and white lettering and cap. A slight pressure on the bottle releases a fine spray. The product is claimed to be both a deodorant and anti-perspirant, greaseless and antiseptic, non-irritating to normal skin and not injurious to fabrics. The price is $1.25 for 2¼ ounces.

COURTLEY

Courtley "spray dry and stay dry" deodorant is a new product packaged in an aerosol can. It is said to be completely safe as it contains no aluminum salts, and to cause no stains. The deodorant is available in a 4 ounce can for $1.10 plus tax, or in combination with men's cologne, with antiseptic body powder or with after shave lotion at $1.75 plus tax.

MAYBELLINE

A new Dove Grey Eyebrow and Eye-Liner Pencil is being introduced by Maybelline. A soft and neutral shade, it is designed to give a tone more subtle than black, yet darker than brown. The new pencil comes in two sizes. The Automatic Pencil, priced at 79¢, in a streamlined turquoise plastic case with gold band, has a spring-locked design that locks the crayon firmly in place and prevents it from falling out. The smaller purse size is priced at 15¢.

ED. PINAUD

A spray hair groomer for men has been inaugurated by the house of Ed. Pinaud. "Spray 'n' Groom", packaged in an aerosol can, contains lanolin, and is said to give the hair body and hold it in place.

RICHARD HUDNUT

Among new items from Richard Hudnut is DuBarry Liquid Bloom, a

Liquid Bloom

complexion tint to be used with all make-up shades. It is said to apply easily with the fingertips, and to wear all day without fading. The price is $1.10 plus tax.

HELENA RUBINSTEIN

In her annual limited-time sale on hormone preparations, Helena Rubinstein offers two combination packages: estrogenic hormone cream and oil, a

Hormone Preparations

$6 value for $3.50; and estrogenic hormone cream and oil and silk-tone special with hormones, a $9 value for $5. This offer is made from December 25 through February 29, 1956.

LADY ESTHER

A nationwide promotional campaign for Lady Esther's 4-purpose face cream as a 69¢ special has been announced for the period January 1-March 31, 1956. The sale will be supported by national advertising, including saturation television and radio coverage.

REVLON

Silicare is the new Revlon medication designed to protect hands from detergents and water. It is said to stay on the hands through five ordinary washings. It retails at $1.25 and is not subject to cosmetic tax.

BOURJOIS

Bourjois has redesigned its Evening in Paris Satin Finish compact, which is now made of white pearlescent plas-

Satin Finish Compact

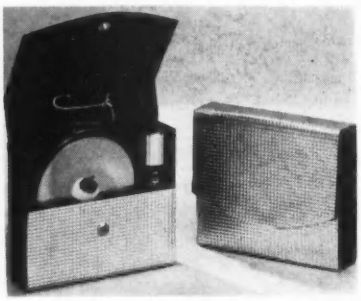
tic with a nylon hinge. Metallic blue Eiffel Towers and stars are stamped in a circular design on the cover. The deep blue carton is decorated with a new lettering design and a motif of white and cerise stars. The compact contains Satin Finish make-up base and face powder perfumed with the Evening in Paris scent. It retails at $1 plus tax.

RICHARD HUDNUT

Richard Hudnut has announced the introduction of two Dubarry color creme rinses for use on gray, white or graying hair. Silverette is applied to highlight gray or graying hair; and Platinette is used to remove yellow from white or light gray hair. The creme rinses are applied directly to the hair after shampooing and simply combed through. A 6-ounce bottle sells for $1.25 plus tax.

COTY

The Pochette, a gilded case to go inside the handbag, or for use alone



Pochette

as an evening accessory, is among the seasonal offerings from Coty. Inside are a cream powder compact and a perfume purser. The set is available in Emeraude fragrance only. It sells for $3.50 plus tax.

COURTLEY

The Courtley Co. is packaging its toiletry products for men in a one-piece die-cut carton constructed so that it locks into place without the use of glue. The side panels slant inward to give the carton an unusual and distinctive shape. The printed cover features the company's logotype in variously spaced circles in contrasting colors. The basic design comes in six cartons of different sizes and shapes, which permits the packaging of different products.

TONI

The Toni Co. announces that a newly formulated homogenized waving cream is the principal feature of a new Prom home permanent. The manufacturer says that the user just applies the cream to her hair as she winds the curls, which completes the operation, as the wave neutralizes itself during the drying period. The Creamy Prom kit retails at $2 plus tax.

LANCOME

Lancôme is featuring a new packaging of its Magie perfume, designed with air travel in mind. Named Avion, the outfit contains a flacon with deeply

Avion Presentation

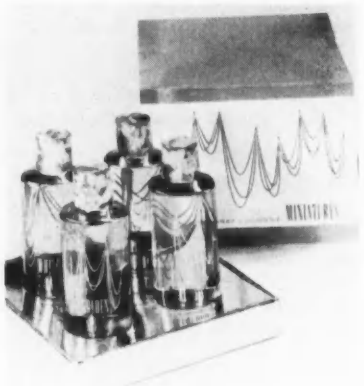
etched fluffs of cloud encircling the heavy clear crystal body. A narrow gold label and gold-plated cap are used. The container fits into a form-fitting circular box of double thickness, the outer wall covered with amaranth satin, the inner one forming a collar around the bottle. The price for over two ounces of the perfume in the Avion presentation is $45, plus tax.

LANOLIN PLUS

The newest addition to the Lanolin Plus line is Triple Purpose Hair Spray Set. Its manufacturer claims that the product holds the hair in place, sets lasting pincurls and beauty conditions the hair. The formula is of the non-lacquer type. The package is a gold foil aerosol spray container, packed six units in a colorful counter display. The cost per can is $1.35.

DOROTHY GRAY

A set of four miniatures of Dorothy Gray colognes are packaged in a white



Cologne Miniatures

and gold box. The bottles, decorated in gold and placed on a pedestal of golden foil, contain one ounce each of Turquoise, Pink Bouquet, Golden Spice and White Lilac cologne. The set retails for $1.50.

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Notes & Topnotes

Crystal-Gazing Toward 1956

THIS is the time of year when mortal man indulges in the sport of crystal-gazing, daring to predict the course of events that have not yet occurred, although he can hardly understand those which have just passed into history. "The coming year will be one of prosperity for business and labor," say the political prophets, but where are the voices of gloom and of doom that predicted the opposite a year or two back? "The coming year will be one of peace," say the perennial optimists, and who among us could survive in the world of the H-bomb if he did not believe that man can live a peaceful life on the planet he has conquered?

We believe that 1956 will see further expansion of the cosmetic industry, which is but beginning to tap its potential in the United States. It is hardly likely that 1956 will see widespread use of color television, but the cosmetic firms, and particularly the manufacturers of makeup, will begin to look more and more toward that medium in order to reach millions of American women with their message. We look to 1956 for aggressive advertising without unjustifiable claims, for lovely packaging without excessive frills, for continued product improvement without radical departures, for effective economies without cheapening of cosmetics. We have faith that it will be a prosperous year for this industry, although more so for some of those in it than for others. Let each pause to ask himself: what am I doing to see that I fall in the former group, not in the latter?

When *The New Yorker* Writes About Musk

CERTAINLY one of the most popular publications in America, *The New Yorker* has amused this reader on countless occasions with its quotations from other magazines, newspapers, books, speeches, and miscellaneous sources. In what we have always felt was good-natured sport, *The New Yorker* has liked to poke fun at typographical errors, slips of the tongue, humorous ambiguities, and sundry other boners that slip by writers and editors. Just how many similar slips appear in their own journal, we do not know, but certainly they pulled a honey when one of their writers, with a pompous air of superiority, explained that "anyone with a knowledge of the available sources of crude drugs" would have realized instantly that the inventories that became the basis of the Coster-Musica scandal were spurious. For example, he went on to point out, there was claimed to be on hand "a supply of ketone musk, which is a perfume fixative derived from a gland of the Himalayan musk deer, that was greater than could have been obtained by annihilating the musk-deer population of Asia." *No comment!*

Old in Years, Young in Spirit

IT has become common practice to think of 65 as the retirement age, and in many firms that is a compulsory retirement age, with no exceptions, while other firms offer voluntary retirement possibilities at the age of 60. Although there is no longer the fear of the poorhouse for the aged, there is a new problem that has arisen—the useful employment of the talents of those who are still young in spirit and healthy in body, and who do not wish to remain idle during their later years. This is called to mind by a news item about Charles L. Gebauer, whose firm has just purchased the Spray Pack Products Co. of Cleveland.

Now, there would be nothing remarkable about one company buying another, except that Charles Gebauer has been making aerosols long before anyone heard of Freon or Genetron. As a matter of fact, he has patents on aerosols that go back to 1901. Just how old this remarkable man is, we do not know, but owning a patent that was issued in 1901, we suspect that he must be at least in his eighties. And, at this ripe young age, he starts on another phase of his business life, purchases a new company, and goes forward with all of the energy, courage, and imagination—and a lot more experience—than a youngster of sixty.

We could say, "More credit to you," and stop at that, but then these words would have significance for only Charles Gebauer and his many friends and admirers. The questions before the public, in any intelligent discussion of geriatrics, are not only how to provide food and shelter for the aging, but how to keep them gainfully occupied, and how to employ their many talents.

A New Use For an Old Item

A NEW product does not necessarily have to be a result of research and development. It may arise from the minds of promotion men, or come from the thinking of an advertising department, or be an adjustment of an old item to a new packaging theme. As the industry goes into its Spring planning and Summer promotions, this comes to mind, because during the last few years one of the most significant steps forward for the perfume and cosmetic industries has been the specific promotion of cologne as a cooling and refreshing Summer product. Primarily through the pioneering activities of a single company, fragrance for Summer use has increased many times, benefitting not only the firm that took the initiative, but other firms as well.

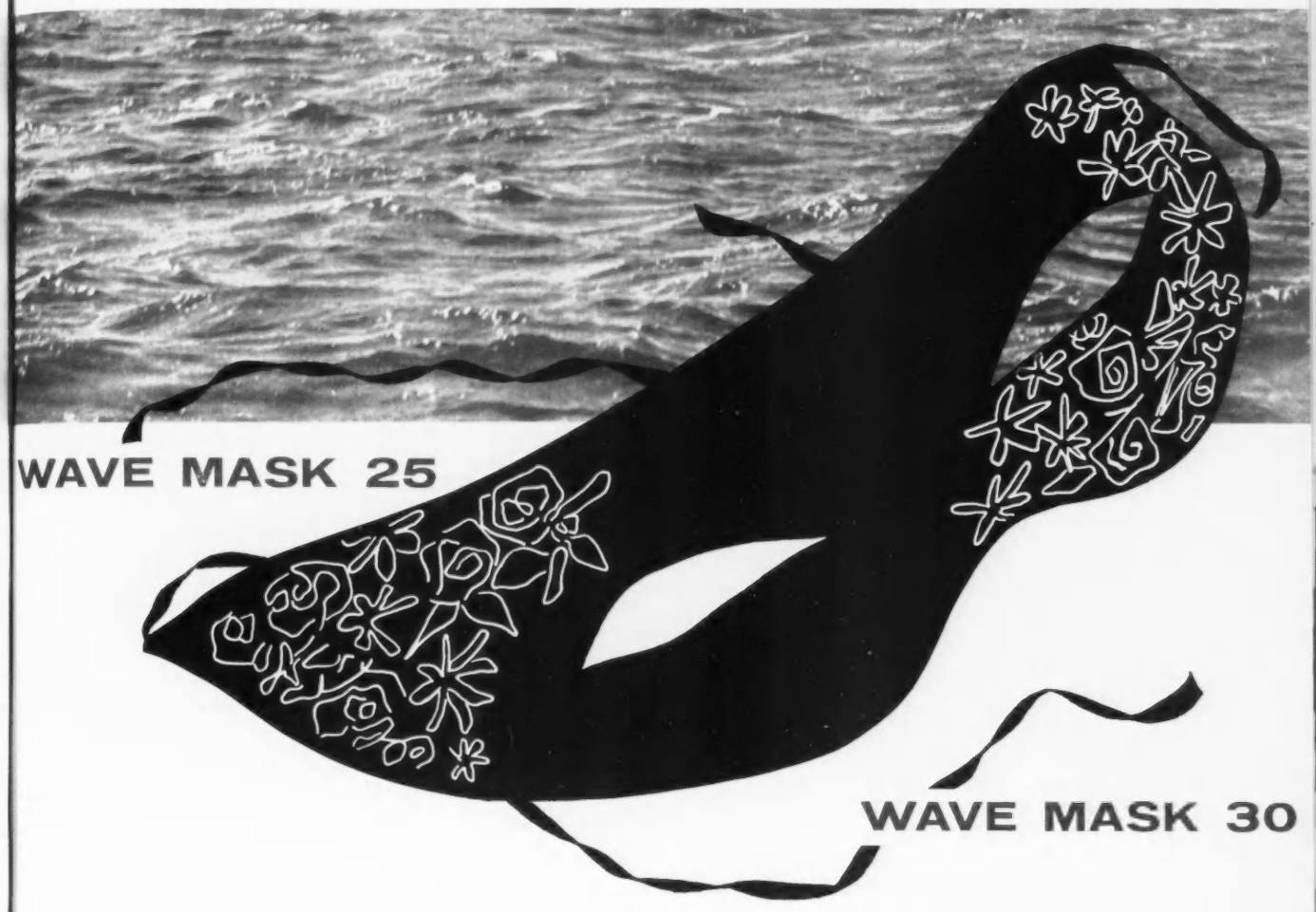
Where shall we look for the continued expansion of the cosmetic industry, now that cosmetics are used by almost all women? We may look in many directions, but one of them is certainly the further use of certain specific products. It is true that all women are using cosmetics, but this does not mean that all women use *all* cosmetics. And fragrance is something still used to only a fraction of the extent that it is desired or needed. Summer cologne has aided the sale of fragrance, almost as if this were a new product. Indeed, in a sense, perhaps it is.

Future Seen For Aerosol Flavors

THE entire field of aerosols has just begun to be tapped. If ever there was an industry in its infancy, this is it. Progress is so rapid that the work of one year seems antiquated by the next. But one aspect of aerosols where progress seemed to lag, after the first great advances, was in the foodstuff industry. There was the great success with whipped cream, a disappointing result with pancake batter, and little else. Where were the salad dressings, cake toppings, and many other products that we had been led to believe were just around the corner?

Our faith is now revived, with the marketing of some aerosol flavors. For this purpose, we can envisage many possible uses—to spray on ice cream or jello, to use in place of fruit for those who wish to satisfy the palate without adding to their caloric intake, to make children's food more attractive. A little banana spray on our dish of corn flakes and milk in the morning might be very attractive for those who like the taste but who would rather not eat the banana. In fact, add a little strawberry out of the other bottle, and one will have a real dish of cereal and fruit. Just don't take away the corn flakes and substitute a spray—we'd like to dig our teeth into something, at least as long as we have teeth!

New Fragrances for Home Permanents



One of the greatest problems in the formulation of home permanents can now be met successfully with new Synfleur fragrances, WAVE MASK 25 and WAVE MASK 30.

Developed in the Synfleur laboratories after long and intensive research into the difficulties posed by the odor of these preparations, these new Synfleur fragrances have proven themselves ideal for the purpose. WAVE MASK 25 and WAVE MASK 30 were evolved by skilled Synfleur chemists and technicians as artistic formulations for cold wave preparations. They are based on essential oils and aromatic chemicals carefully screened for stability, compatibility and solubility.

These basic fragrances can also be adapted for effective, economical use in other thioglycolate products where similar masking problems are encountered. Our laboratories are at your disposal to assist in their incorporation. Simply ask for samples, data or other help – without obligation.

WAVE MASK 25
$3.00 the pound

WAVE MASK 30
$3.75 the pound

Founded 1839 by Alois Von Isakovics

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New Products

Beakers and Test Tube

The Nalge Co., Inc. manufactures beakers and a test tube made of Tenite

Beakers and Test Tube

polyethylene. These products are said to be virtually unbreakable and chemically inert, and to prove useful in operations when heat is not required. The beakers are molded in graduated sizes ranging up to 1000 ml. and have a pouring spout and tapering sides which enable them to be nested. The test tube, originally designed for centrifuge use, is said to take much higher centrifugal forces than conventional tubes.

Vacuum-Formed Signs

The development and production of vacuum-formed transparent self-adhering plastic signs for display and point-of-sale purposes has been announced by Goodren Products Corp. The Goodstix sign is manufactured in three dimensions, and the users will be able to obtain unusual dimensional effects in product display. The signs are printed in four to five colors and names of various products are interchangeable in combination runs. An inverted framing for special signs that can be applied to the inside of a front window is also available. The displays have a maximum size of 24 by 36 inches and are printed on .0075 to .010 gauge transparent plastic. Reproduction of line drawings, flexographic halftones and full color gravure is said to be easily accomplished. The company guarantees that all colors can be matched to order.

Polyethylene Hand-Pump

A hand-pump with all working parts made entirely of polyethylene is being

Hand-Pump

manufactured by Bel-Arts Products. Polyethylene was chosen because it is said to be unaffected by strong acids, alkalies and most solvents, making the pump suitable for many manufacturing processes. The manufacturer credits the pump with delivering a gallon of liquid in a few seconds, and of emptying a drum within 1/8 of an inch of bottom. The pump is available with various fittings and in several sizes, and can also be made to specifications.

Stereo System

A new promotion device is the View-Master Stereo System, which features 3-dimension color photographs of a product or manufacturing system. Reels of seven photographs to fit the device may be ordered from the company. The actual photography can be done by a professional or good amateur photographer. The set can be installed in point of purchase displays or in salesmen's sales kits.

Organo-Silicone Compounds

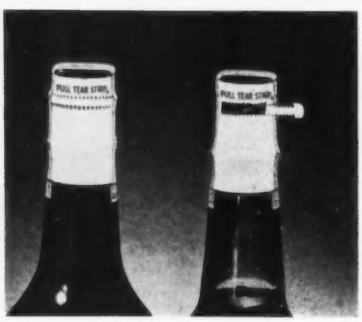
The Linde Air Products Co. claims unusual lubricating and solubility properties for six new organo-silicone compounds which it now has ready for the market in commercial quantities and also for development purposes. The company says that the new compounds have excellent release properties, special thermal and viscosity stability and water repellency, and lubrication and anti-wear properties that rival those of petroleum oils, and that they can be used as emulsion breakers for oil products or as emulsifying agents under other conditions. Four are water soluble and two are soluble in both high and low aromatic solvents.

Label Design Service

The Allen Hollander Co., producers of labels for products and packages, has retained E. Leonard Koppel, designer, to offer a scientific label design service which includes pre-market surveys, shelf-life tests, specialization in inks and colors, and solutions to the merchandising problems involved in label design. The company feels that the service will raise the standards of label design and increase sales of products on all levels.

Cellulose Seals

A new development in cellulose seals for glass packages has been revealed by the Celon Co. A tear strip with tab is



Cellulose Seals

incorporated into the seal, so that a pull of the tab easily breaks the seal at the point where screw cap and glass meet, leaving the cap or cork free for immediate removal. This device insures that the seal below the cap will remain intact, and that sales slogans and copy on this portion of the package are retained.

OAK MOSS DERIVATIVES

Absolute Mousse de Chêne Yougo
Absolute Mousse de Chêne Yougo décolorée
Absolute Mousse de Chêne Selecta
Absolute Mousse de Chêne Tyrol 100%
Absolute Mousse de Chêne Brown

Hyperabsolue* Mousse de Chêne incolore
Hyperabsolue* Mousse de Chêne Fontainebleau
Hyperabsolue* Mousse de Chêne Fontainebleau incolore
Hyperabsolue* Mousse de Chêne Selecta
Hyperabsolue* Mousse de Chêne Yougo

Intégrale* Mousse de Chêne Yougo

Resinoid Mousse de Chêne Y
Resinoid Oak Moss Extra
Resinoid Oak Moss
Resinoid Mousse P
Resinoid Mousse S

Concrete Oak Moss
Concrete Mousse décolorée
Concrete Mousse de Chêne Y
Concrete Mousse d'Arbre

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*with the exception of Resinoids

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CHARABOT & CO. INC.

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Hints for Improving Production

Moist-O-Graph System

An improved Moist-O-Graph system is available from the Minneapolis-Honeywell Regulator Co. The system is recommended for manufacturing processes in which moisture control is an important factor. The manufacturer claims that a redesigned circuit with fewer moving mechanical parts results in improved stability, better reliability, more precise automatic control, less maintenance and reduced spare parts stock. Three types of the system are available: recording only, recording and controlling, and recording and cascade controlling.

Spectranal

Two new models of the Todd Spectranal, recently purchased and now manufactured by Fisher Scientific Co., are offered this month. The machine is a simple spectrum-analyzing instrument for rapid identification of 61 metallic and non-metallic elements. The manufacturer says that the machine is relatively inexpensive, easy-to-operate, and versatile. Its chief function is to reduce the time required in preliminary analyses. The instrument is completely self-contained, operates from a standard 115-volt 50-60 cycle a-c electrical outlet. No auxiliary power supply is needed. The low-voltage electrical network is fused for safety.

Continuous Mixer and Blender

The Girdler Co. announces that it is now the exclusive manufacturer of the American Machine & Foundry Co. continuous mixer and continuous disc blender. The capacity of the mixer is said to range from 700 to 15,000 pounds per hour, depending on the product. The manufacturer claims that the "turbo-shear" mixing action results in a finer cell structure, a more stable mix, better keeping quality and greater uniformity. It is made of stainless steel and its completely enclosed system may be cleaned by flushing with steam and water. The disc blender is said to provide important advantages in continuously pre-mixing wet and dry materials, and is employed with the mixer in continuous wet and dry processing operations.

Photoelectric Analyzer

The Model III photoelectric analyzer, an instrument for automatically analyzing, recording and controlling chemical processes involving liquids, vapors, or gases, is offered by Manufacturers Engineering & Equipment Corp. The manufacturer claims that accurate automatic recording over many days, without auxiliary attendance, is possible with the machine because of its self-monitoring properties which enable it not only to record or control a process, but periodically and automatically to check and re-set itself to compensate for any smudge accumulation on cell windows or other similar sources of error. It is said to serve not only as a tool for process control or as an automatic recording analyzer for chemical processes, but to work equally well in problems involving monitoring and prevention of stream pollution.

Photoelectric Analyzer

Packaged Fluid Agitators

The Philadelphia Gear Works announces a line of packaged fluid agitators. The company says that its engineers are prepared to specify agitation to meet full process requirements. A full line of turbine and paddle type impellers is offered. The agitators are shipped complete and ready to run.

Trade Literature

A description of a new line of diaphragm control valves, designated Series 400, is offered by the Minneapolis-Honeywell Regulator Co. Data include actuator and body specifications, flow characteristics and complete dimensions for the double-seated, single-seated and three-way types which comprise the line.

"Aerosols Basic Characteristics and Attendant Problems" has been published by N. V. Chemische Fabriek "Naarden," Bussum, Holland. The booklet discusses the marketing of products in aerosol form, giving technical and other information. Included is a table of the most common propellents which gives chemical formulas and physical properties.

A guide to the services offered by leading chemical companies and laboratories has been prepared by Association of Consulting Chemists and Chemical Engineers, Inc. The booklet, "Consulting Services, 15th Edition, 1955," lists the services by type, gives relevant data on all members with the scope and activities of each, and also provides a geographical list of the membership.

A revised, comprehensive bibliography of the literature on its G-11 brand of hexachlorophene has been issued by Sindar Corp. This bibliography, "Technical Bulletin H-1," contains references and abstracts of some 136 scientific and trade articles, and abstracts of 19 patents, foreign and domestic.

A price list of its aromatic chemicals is presented every two months by Polak & Schwarz, Zaandam, Holland.

A chart designed to identify the probable source of failure or erratic performance in most widely used types of rotary displacement pumps is contained in a new pamphlet, "Pump Chart Spots the Trouble." Prepared by the Eco Engineering Co., the chart details over 25 possible mechanical and chemical trouble symptoms, such as noisy and intermittent operation, rapid wear, leakage, seizure, foaming, high power requirements and faulty delivery.

Roll and vane-type feeders and rotary valves are described in a bulletin offered by Fuller Co. The materials handled by the feeders, such as chemicals, powdered metals, grains and food products, cements, clay and mineral products, coal, biologicals, rubber, bone and wood products, are listed.

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The Sweetening Power of Stevioside

MORRIS B. JACOBS, Ph.D.

A natural material extracted from the leaves of a wild shrub of Paraguay which has 300 times the sweetening power of sucrose

FROM time to time articles have appeared in this section of the AMERICAN PERFUMER on sweetening agents, particularly on artificial and synthetic sweetening agents. The natural sweetening agents, namely sucrose or common sugar, (cane sugar, beet sugar), glucose (dextrose, grape sugar, etc.), lactose, maltose, fructose (levulose) are, of course far more important than the synthetic sweetening agents. Nevertheless the desire for and in some instances the need for noncaloric sweetening agents are major factors in the continuing interest in such compounds.

Sorbitol and Mannitol

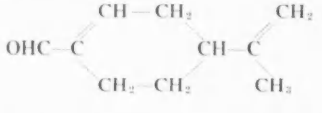
There are a number of natural sweetening agents which are derivatives of carbohydrates such as sorbitol and mannitol which may also be mentioned in this connection.

Sorbitol or D-sorbitol, $HOCH_2(CHOH)_4CH_2OH$, is a hexahydric alcohol. It is a dry, white, odorless, crystalline powder with a sweet, pleasant, cooling taste. It melts in the pure state at 93° C. but the range may be from 87 to 97 deg. C. Sorbitol is sold commercially as an aqueous solution under a number of trade names.

Mannitol or D-mannitol is another hexahydric alcohol. It is also a colorless, odorless, crystalline powder having a sweet taste with about half the sweetening power of sucrose. It melts at about 166 deg. C. and is sparingly soluble in cold water but is much more readily soluble in hot water. It has been suggested as a sweetening agent in diabetic foods because there is a delay in its conversion to glucose in the body and hence there is a slower utilization by the body of this material than sucrose or glucose. It is utilized even less readily than sorbitol.

Perilla Aldehyde Antialdoxime

Many years ago Semmler[1] isolated an unsaturated aldehyde from an essential oil from a plant called *Perilla nankinensis*, very likely more properly, *Perilla frutescens* which is the source of genuine perilla oil[2] and which contains from 40 to 55 per cent of perillaldehyde or perilla aldehyde as it is often termed.



The flavor properties of the oil and perillaldehyde are not significantly characterized by sweetness but the alpha-*anti*-aldoxime prepared by Furukawa and Tomizawa[3] about 1920 is 2000 times as sweet as sucrose and thus from 4 to 8 times as sweet as saccharin. Since the alpha-*anti*-aldoxime is a derivative of an isolate it is not really a natural product but the relative change or processing is not intensive.

It is of interest to point out here that the isomeric betal-*syn*-aldoxime is not sweet at all. This is analogous to the finding of Gilman and Dickey[4] that the synthetic compound *syn*-5-benzyl-2-furaldoxime was sweet, about 700 times as sweet as sucrose whereas the *anti* isomer was only 100 times as sweet as sugar.

Another note of interest is that the Japanese Government permits the use of perilla alpha-*anti*-aldoxime as a replacement for licorice, honey, or maple syrup in the sweetening of tobacco and that most of the perilla oil produced in Japan is converted to this sweetening agent for that purpose.

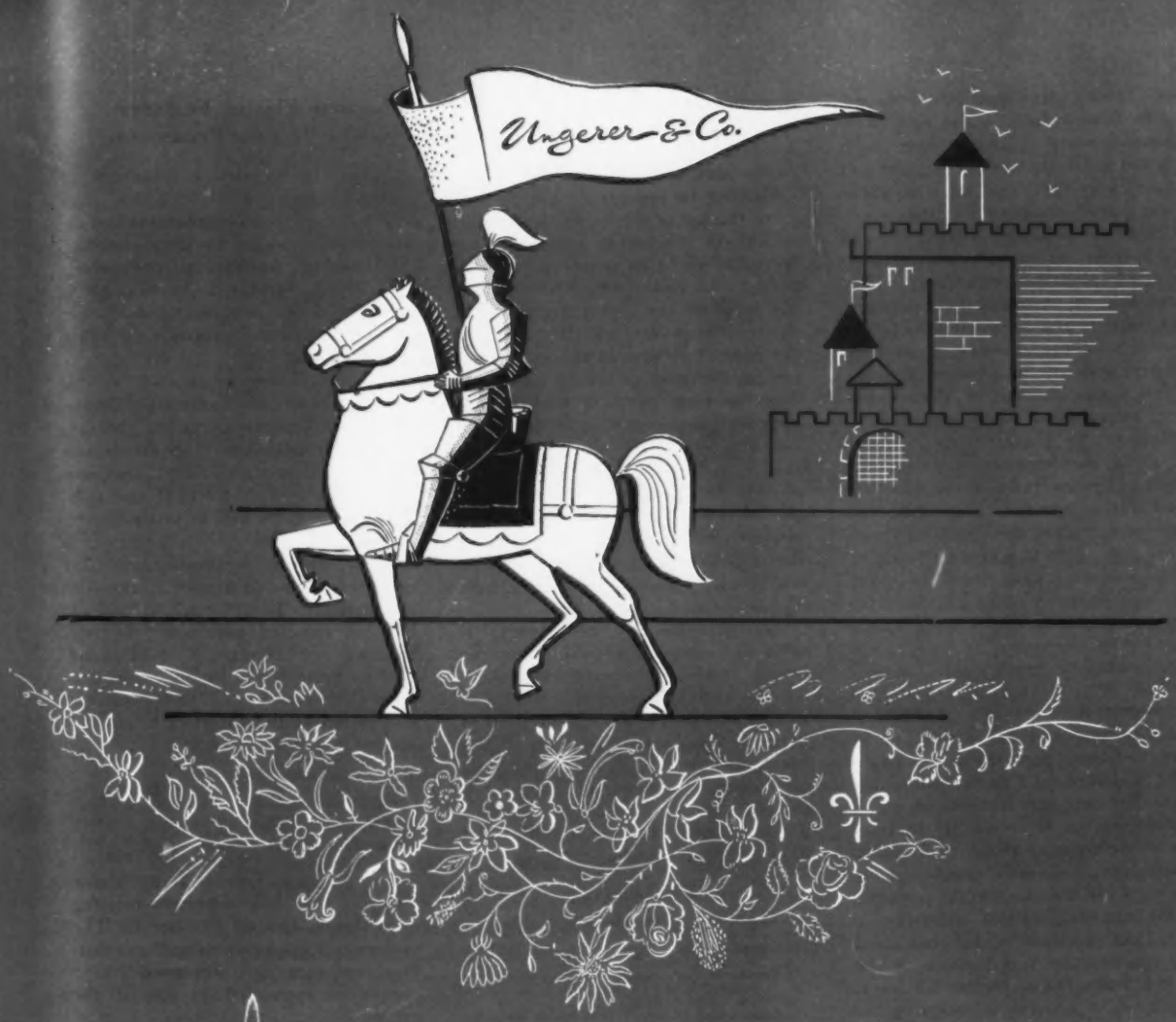
Stevioside

Recently Dr. Hewitt G. Fletcher, Jr., of the National Institute of Arthritis and Metabolic Diseases, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare, focused attention again on stevioside, a glycoside[5] that can be extracted from a Paraguayan plant. In 1954 Bell[6] also called attention to this unique sweetening agent.

The plant from which this sweetening agent, which is said to be 300 times as sweet as sucrose, has been extracted is presently known as *Stevia rebaudiana* Bertoni, Fam. Compositae, and was originally given the name *Eupatorium rebaudianum*.

The natives of Paraguay, where the shrub is grown or found, have used it to sweeten bitter beverages for many years. It is called in the Guarani dialect *ca-á jheé* (*kaà hê-ê*) or *ca-á yupé*.

It is possible that the sweet char-



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acter of this plant may have been noted by Bertoni in 1899 and very likely Rasenack noted it later in 1908 but it was not until the work of Briedel and Lavieille in 1931[7] that its remarkable sweet character was fully recognized.

These investigators isolated the glycoside from the leaves by means of an aqueous alcoholic extraction. They were able to crystallize the compound but were unable originally to hydrolyze it with the enzymes of air-dried brewers yeast or the powder of *Aspergillus niger*, emulsin, or rhamnodiastase. Subsequently they were able to hydrolyze the glycoside enzymatically by using the hepato-pancreatic juice or the digestive juice of the vineyard snail, *Helix pomatia*. They were also able to hydrolyze the compound with 5 per cent sulfuric acid at 100 deg. C. This processing gave them two products, one being D-glucose and the other being the aglucon, that is the nonsugar part of the molecule.

Subsequently Briedel and Lavieille studied the physiological response of this sweetening agent. They found that this glucoside did not appear to be toxic to guinea pigs, rabbits, or chickens and that it was a neutral substance. Since that time very little was done on elucidating the structure of the compound although as Wood and his collaborators[8] point out a number of authors did call attention to the powerful sweetening effect of this material.

In 1952, the study of this compound was resumed by investigators of the United States Public Health Service as a part of a general investigation of natural products that might prove useful as raw materials.

By more modern methods as much as 7 per cent of crude stevioside was isolated from the dried leaves. This was done by extracting the dried plant material with water and deionizing the extract with ion-exchange resins as in modern methods of beet-sugar refining. The resultant solution was concentrated *in vacuo* to give a residue from which the crude stevioside was crystallized with the aid of methyl alcohol. The pure glycoside was obtained by recrystallization from a mixture of methyl alcohol and dioxane.

The structure of the glycoside was studied by two groups of investigators, one of which studied the glucose fractions[8] and the other the aglucon portion[9]. It was found to have the formula $C_{12}H_{21}O_{11}$. $C_{19}H_{28}CO$. $C_6H_{11}O_6$ ($C_{38}H_{60}O_{18}$).

The stevioside molecule contains three glucosepyranose units, two of which are joined together in an unusual linkage and then to the aglucon while the third is esterified to the aglucon moiety. The aglucon obtained by enzymatic hydrolysis is known as steviol while that obtained by acid hydrolysis is known as isosteviol. Both appear to be diterpenoid acids with a 2,11-cyclopentanoperhydrophenanthrene skeleton.

Fletcher in appraising the possibility of the use of stevioside as a natural noncaloric sweetening agent was not optimistic as to its possibility of competing with such a relatively inexpensive artificial sweetening agent as saccharin. He points out that assuming the yield of an acre of the experimenters in Paraguay could be duplicated then the yield per acre would be 53 pounds if the leaves could produce 6 per cent of the glycoside. Since this would be equivalent to about 40 pounds of saccharin at about $90.00 the stevioside would have to show marked flavor properties over saccharin. This might be possible since it is said not to have the bitter aftertaste of saccharin.

However, Fletcher does stress the need for caution in using stevioside before really adequate testing of its toxicity and physiological response in human beings. There are no reports of harm to the Paraguayan users of this sweetening agent, nevertheless, only after exhaustive and long term tests of the effect of the ingestion of stevioside have been made can the suitability for food use be evaluated.

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Flavored Notes

THERE are various ways of classifying liqueurs and cordials and such methods have been discussed in this section of the AMERICAN PERFUMER and in my book *Synthetic Food Adjuncts*. Leroux & Co. group their liqueurs into five groups: from seeds such as caraway seed the flavoring of kümmel; from herbs including roots and stems as Claristine; from fruits as apricot, cherry, and peach; from peels and rinds of citrus fruits as curacao and triple sec; and the cremes such as menthe and cacao.

The United States Tariff Commission has issued *Synthetic Organic Chemicals*—United States Production and Sales, 1954. This report will be abstracted and reviewed in a subsequent issue of the AMERICAN PERFUMER, Flavor Section.

Givaudan Flavors Features Specific Product Promotion

Givaudan Flavors, a subsidiary of Givaudan-Delawanna, Inc., has over the past few years introduced specific product promotion in its advertising, replacing the institutional copy which was formerly featured. An example is the company's new raspberry flavor, which was recently introduced using two-color page ads.

All advertising is directed at the manufacturers who constitute Givaudan's market—producers of bakery, beverage, confectionery, ice cream and other food products. The company handles its own direct mail and publicity material, as well as producing its own house organ.

E. R. Durrer is president of the company; Leonard Stoller is advertising manager. The Hazard Advertising Co. has handled advertising for the company for 25 years. The firm's ad policies are directed by an advertising committee headed by the president and including the advertising manager and principal sales executives.

Fruit & Syrup Manufacturers Meet

The National Fruit & Syrup Manufacturers Assn. held a western meeting in St. Louis, Mo. on October 25. The projected plans for an overall membership campaign were approved and a committee appointed to handle the matter.

A plan was submitted and approved to develop an informative manual which will be available to dairy departments, colleges and universities, as well as for use by member companies. This manual will contain general information on products manufactured by the industry and how they may be utilized in end products.

A general discussion took place in regard to the laws of the state of Wisconsin regarding the use of benzoate of soda in food products. Members were advised to contact state authorities direct in order to develop full information and interpretation of the laws.

The proposed ruling of the Food & Drug Administration, concerning the definitions of standards of identity for canned pineapple and pineapple juice, was discussed. John Hall, head of the association legal staff, explained that the products manufactured for fountain use or to be put in ice cream were excluded from the ruling, though it would be necessary to add the word "topping" to the words "crushed pineapple" when selling these products.

The convention committee is working to set up complete plans for the forthcoming convention in May, 1956.

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Bouquet Kashmiri	Honeysuckle	Narcisse
Carnation	Jasmin	New Mown Hay
Chypre	Jockey Club	Rose
Cologne	Lavender	Sweet Pea
Divinia	Lilac	Violet
Florida		Wistaria

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25 and 50 lb. cans	$3.00 per lb.
5 lb. bottles	3.15 per lb.
Trial Pounds	3.25 per lb.

SERIES NO. 600 ORBIS ODORS

Bouquet CH	Divinia	Millefleurs
Bouquet de Oriente	Florida	Muguet
Bouquet Kashmiri	Gardenia	Narcisse
Bouquet Parisienne	Heliotrope	Neroli
Bouquet TB	Honeysuckle	New Mown Hay
Chypre	Jasmin	Oriental
Cologne	Jockey Club	Rose
Corylopsis	Lavender	Sweet Pea
Crechene	Lilac	Violet
Cuir de Russie	Magnolia	Wistaria

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25 and 50 lb. cans	$6.00 per lb.
5 lb. bottles	6.15 per lb.
Trial Pounds	6.25 per lb.

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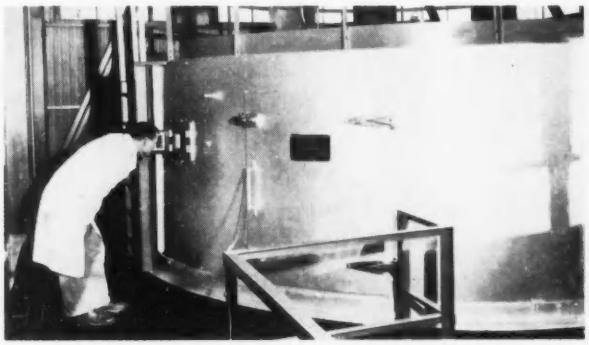
Norda engineers and chemists co-operating with Nichols Engineering & Research Co. design and adapt Nyrop process with innovations—New spray drying plant in operation

J. M. WENNEIS*



Operator checks spray drying process at top of main drying chamber.

Up on top of the cyclone collectors.

The main drying chamber used for the spray drying of a full line of flavors.

WITH the completion of its new plant at Boonton, N. J., for the spray drying of a full line of flavors, Norda Essential Oil & Chemical Co. has assumed the initiative in this segment of the flavor industry. Although known for many years, the process of spray drying is a comparatively recent development in the preparation of dry flavors.

Until the past few years dry flavors were prepared simply by drying liquid flavors, either natural or imitation, on the surface of a dry base such as cane sugar, corn sugar, starch, etc. This was often difficult to do, resulting many times in damp and sticky mixtures which caked badly. Very often the time necessary to dry a powder satisfactorily was so long that much of flavor evaporated. Again, many of the flavors used in powders, by being spread on the base as a very thin coating, were subjected to accelerated evaporation, oxidation, and rancidity, and the flavor life of the product was very short.

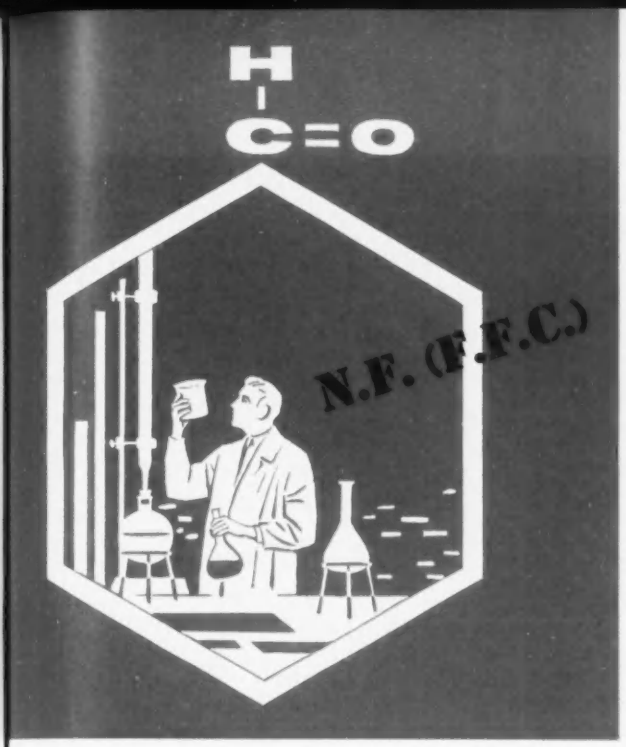
The introduction of spray drying solved all these difficulties. The time of drying was reduced very drastically. By the older procedure, drying took anywhere from ten minutes to an hour. In the spray dryer this time is reduced to a fraction of a second, and because the drying is practically instantaneous, there is only very little loss of the flavor constituents—even those which are comparatively low-boiling. This rapid drying is accomplished by spraying the flavor solution, containing the base on which it is to be dried, into a large chamber through which a current of hot air is flowing. The minute droplets of the spray meet the current of hot air and are dried instantly.

Furthermore, the flavor solution contains a colloid which, in the drying operation, encloses the flavor in an infinitesimally thin colloidal layer. This layer, though extremely thin, protects the flavor in the same way that the peel of a fruit protects the flavor and freshness of the fruit. Evaporation and oxidation in the flavor powder are prevented by this protective coating. Here is the great advantage of spray drying—the dried flavor is almost exactly the same as the flavor used. There is no appreciable loss. Also, when dried, the flavors have longer life than mechanically dried flavors, because they are protected by the thin colloidal coating.

With its new equipment, the company points out it will be possible to produce, not only quality flavors in large volumes, but a range of products not possible before this time—from the easily dried imitation flavors to the very difficult natural flavors and fruit juices.

Norda's technical staff of engineers and chemists, in cooperation with the engineering staff of the Nichols Engineering & Research Corp., designed, developed, and adapted the famous system originated by Nyrop, the Danish engineer, about 30 years ago to Norda's needs. One of the innovations is the indirect heating of the air by electric heat. Usually, the gases from burning oil are used, and there is always danger of contamination. In this new dryer, the air is first filtered and then heated by passing through electric heaters. About 5,000 cu. ft. of air per minute

* Technical director, Norda Essential Oil & Chemical Co.



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Some of the applications for Benzaldehyde, such as in flavors and odorants, depend on the physical properties of volatility, odor and taste. Other uses—for instance, in the synthesis of dyes and drugs—are based on its chemical reactivity.

Which of these properties—physical or chemical—are of interest in the development of your new product? Heyden, the leading manufacturer of Benzaldehyde, offers two grades designed for various uses. The unsurpassed purity of Heyden Benzaldehyde N.F. (F.F.C.) makes it the preferred product for the formulation of cosmetics, odorants and flavoring agents. For use in organic syntheses, Heyden Benzaldehyde Technical can be depended upon for high quality and uniformity.

The Heyden sales office nearest you will welcome the opportunity to discuss your requirements, or see that you receive samples and technical information.

OTHER HEYDEN INTERMEDIATES

o-Chlorobenzaldehyde
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are heated this way, to about 450°F before going into the drying chamber. The drying equipment is constructed entirely of polished stainless steel. The main drying chamber is 18 feet in diameter, and the capacity of the unit is approximately 375 pounds of powder per hour.

The operation of the dryer is almost completely automatic, requiring the minimum of supervision and labor. By means of this automatic control of temperature, volume of air, spray size, and all other factors, it is possible to insure quality and complete uniformity of "in-blown" flavor powders. In the near future, Norda will offer spray-dried genuine fruit flavors and will also offer the whole spray-dried powdered fruit, useful for many new and practically unheard-of applications in packaged food products.

47th Annual Meeting Of Flavoring Manufacturers

The 47th annual meeting of the Flavoring Extract Manufacturers Assn. is scheduled to be held at the Hotel Traymore in Atlantic City, N. J. on May 13-16, 1956. A program of talks on subjects of interest to the flavoring field is being worked out and will be announced in detail early next year.

Robert Krone of Fritzsche Brothers, Inc. is convention chairman. Those assisting him are Jack Mulligan of Candy Industry, in charge of entertainment; Charles P. McCormick, Jr. of McCormick & Co., program; William X. Clark, Sterwin Chemicals Inc., registration; and Frank Green of Allied Chemical & Dye Corp., golf.

Boyce Thompson Progressing With Extraction of Vanilla

A recent bulletin from the Flavoring Extract Manufacturers' Assn. reveals that in accordance with a directive of its Scientific Research Committee, the Boyce Thompson Institute for Plant Research, Inc. is concentrating its efforts on splitting vanilla extract into fractions that can be examined by instrumentation to obtain graphs of components characteristic of pure vanilla.

By subjecting vanilla extract to continuous extraction with a very low boiling hydrocarbon solvent, (isopentane b.p. 29° C), a fraction has been obtained consisting of vanillin and other components. This portion will be fractionated further in a vapor-fractometer and the spectral characteristics of its components examined.

The residue left after extraction with the hydrocarbon solvent will be split up further by solvent extraction, fractional distillation, or other means, and the component groups obtained analyzed for characteristic peaks in the infra red region.

The Scientific Research Committee is starting preparation of standard single strength vanilla extract from Mexican beans for comparison with the values to be obtained on Bourbon beans.

Fritzsche Quarter Century Club Holds Annual Party

A cocktail party and dinner were held on November 10 at the New York Athletic Club for the Quarter of a Century Club of Fritzsche Brothers, Inc. Guests of honor were four new members who had achieved the 25 years of service which qualified them for membership—Mrs. Elizabeth Adelmann, Miss Barbara Schmidt and Herman Gossen and Walter Gorman. Among members present were chairman of the board of Fritzsche Brothers, Frederick H. Leonhardt and president John H. Montgomery.

Dr. Ernest Guenther showed colored moving pictures of his recent visit to southern Europe and North Africa.

Forbid Use of Coal Tar Colors in Foods

The Food & Drug Administration has issued a final order with respect to coal tar colors formerly listed as FD&C Orange #1, FD&C Orange #2 and FD&C Red #32. In effect, the new order forbids the use of these three colors in foods, but leaves them available for use in externally applied drugs and cosmetics. These colors are now identified as EXT. D&C Orange #3, EXT. D&C Orange #4 and EXT. D&C Red #14.

Heine & Co. Starts Business Again in New York

Norda Essential Oil & Chemical Co., which recently purchased all of the American assets of Heine & Co., announces that the company has resumed business in New York at 601 W. 26 St., New York 1, N. Y.

Heine & Co., originating in Leipzig, Germany, began its operations in the United States in 1905. Paul Schulz-Berge and his brother, Theodore, worked closely with the parent company in producing natural and artificial flower products, essential oils, and aromatic chemicals which established unparalleled standards for quality and excellence. In 1946, under the Trading with the Enemy Act, the United States Government Alien Property Custodian seized Heine & Co.

Frederick C. Keidel, long one of the leading perfumers in the industry, will again be chief perfumer of Heine & Co., assisted by a staff of competent perfumers and chemists. Chester Tompkins will be in charge of sales. Heiko-Lilac "A," Heiko-Jasminette White, Heiko-Pink, and all the Heiko creations (trademarked by the Heiko "tulip") will again be available.

Dodge & Olcott Give First Achievement Award

The first Dodge & Olcott achievement award for outstanding contribution to the growth and general welfare of the meat packing industry as a whole was presented to Virgil R. Rupp on November 14 at the 50th annual meeting of the American Meat Institute in Chicago. Mr. Rupp, manager of quality control of Kingan, Inc., was honored for his development of a commercially practicable method of curing bellies by means of a multiple-needle pickle injection, called injecto-cure.

The award consisted of a check for $1000 and a gold medal. Presentation was made by H. H. Corey, president of George A. Hormel & Co. and chairman of the award committee.

FEMA Gives Views on Sugar to Dept. of Agriculture

The Flavoring Extract Manufacturers' Assn. in November issued a statement to the Department of Agriculture on behalf of wholesale and retail manufacturers of confectionery, soft drink bottlers, preservers, manufacturers of flavorings and flavoring supplies, and all major industrial users of sugar. The statement was made as a result of a public hearing held by the department on sugar requirements for 1956.

The statement in effect said that recent administration of the Sugar Act, whereby a price objective attractive to domestic producers is the dominating factor, is not in accordance with the intent or purpose of the act. The paper concluded that the price of sugar to the consumer is too high, that a move to increase domestic production of sugar through legislation would seem to have been invited by the correct administration of the act, and that a conflict exists between the farm policy of the Secretary of Agriculture and the correct administration of the Sugar Act. The association recommended that 8,875,000 tons of sugar be set as the domestic consumption estimate for 1956.

Deodorants with G-11®

(Brand of Hexachlorophene)

remove the cause of body odor

Soaps, detergents, creams, colognes, sticks and lotions containing G-11 are making dramatic sales increases because they combat the fundamental cause of body odor.

Body odor, particularly underarm odor, is caused by the action of skin bacteria on perspiration. Research has shown fresh perspiration to be odorless until it is contaminated with skin bacteria. G-11 combats these bacteria and thus removes the basic cause of the odor.

G-11 remains on the skin, even from soaps which are thoroughly rinsed off with water. Thus the deodorant action persists for days. Persons who have used deodorants with G-11 for three and four years show no immunity to their action.

Over seventy scientific articles, mostly by independent researchers, have been published over the last ten years attesting to the antibacterial and deodorant performance of G-11.

In addition, G-11 is not perceptible while on the skin, has no harmful effect on clothing, is compatible with perfumes, is readily soluble in soaps and cosmetic formulations, and is non-staining and non-irritating.

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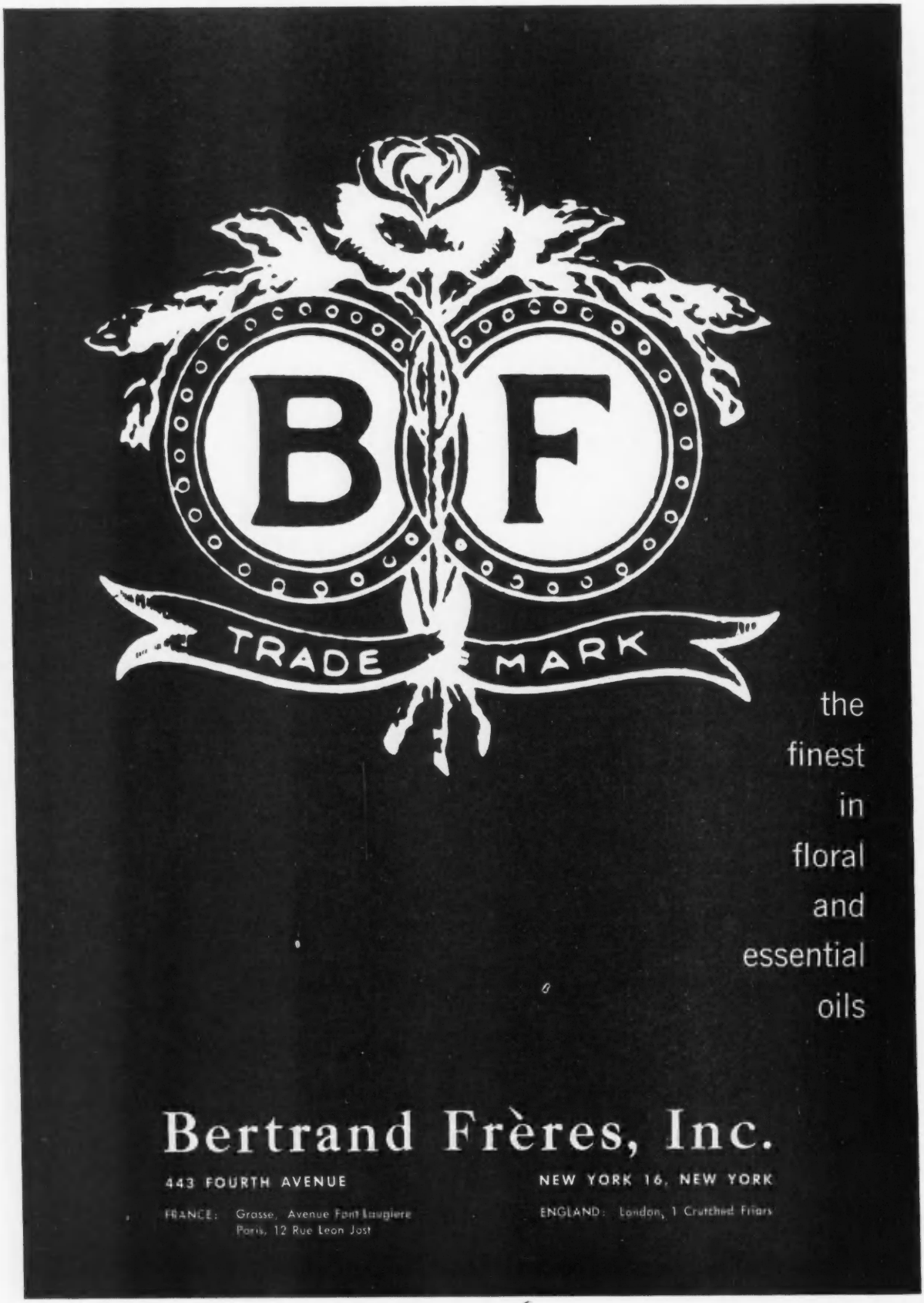
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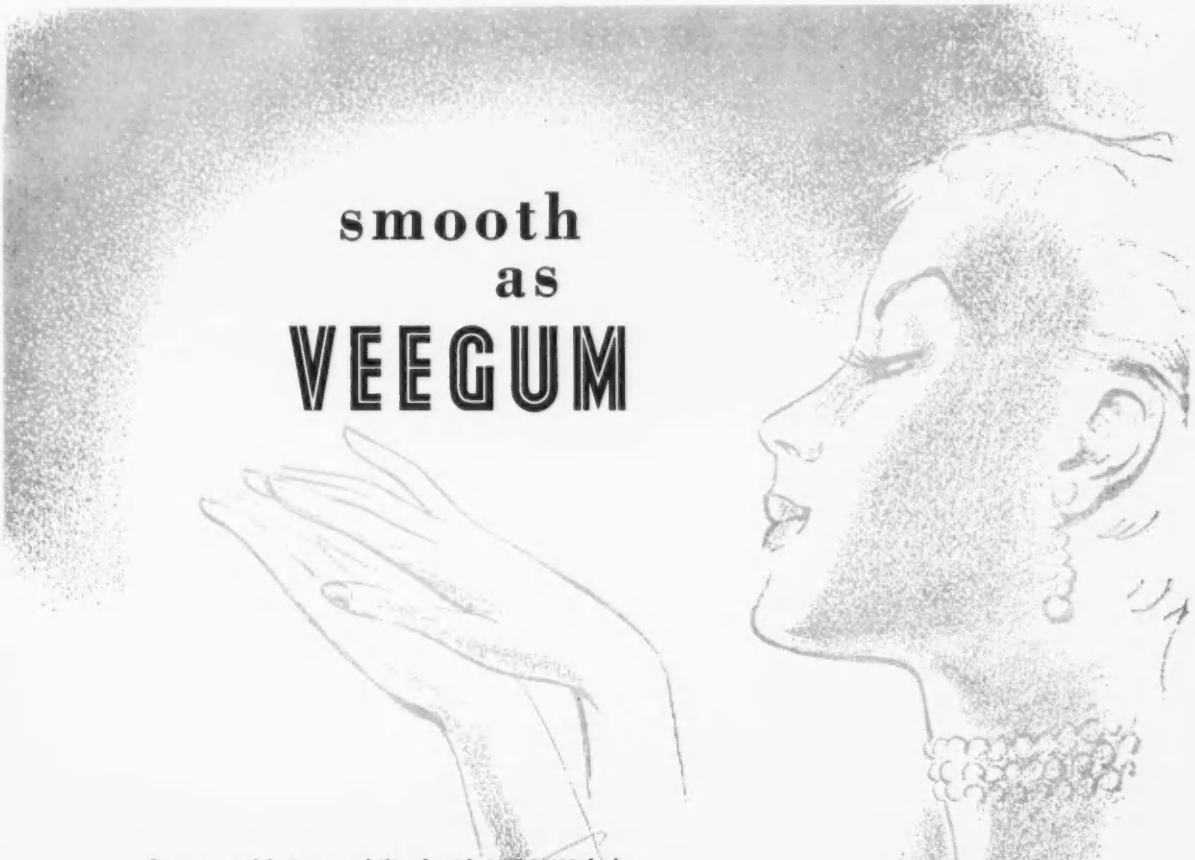

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VEEGUM is a high-purity, inorganic thickener, emulsifier and suspending agent with thixotropic characteristics that make it the ideal conditioner. *Veegum* prevents product thinning, bleeding, and tackiness, even at higher than normal temperatures because it has the unique property of thickening slightly with heat. *Veegum* concentrations (of less than 1%) permanently stabilize many types of emulsions containing oils, fats, and waxes, preventing the phase inversion often encountered in formulations of this type. *Veegum* in aqueous dispersions is compatible with alcohols, polyglycols and similar organic solvents, producing quick-spreading liquids and lotions with superior aging properties, smooth, soft texture, and more attractive appearance.

VEEGUM is a safe, high-quality Vanderbilt product, nontoxic, nonirritating, odorless and tasteless, with an opaque white appearance. It is a complex colloidal magnesium aluminum silicate, developed from natural sources and highly refined under careful laboratory control to assure the highest degree of purity and uniformity. Send today for complete information.

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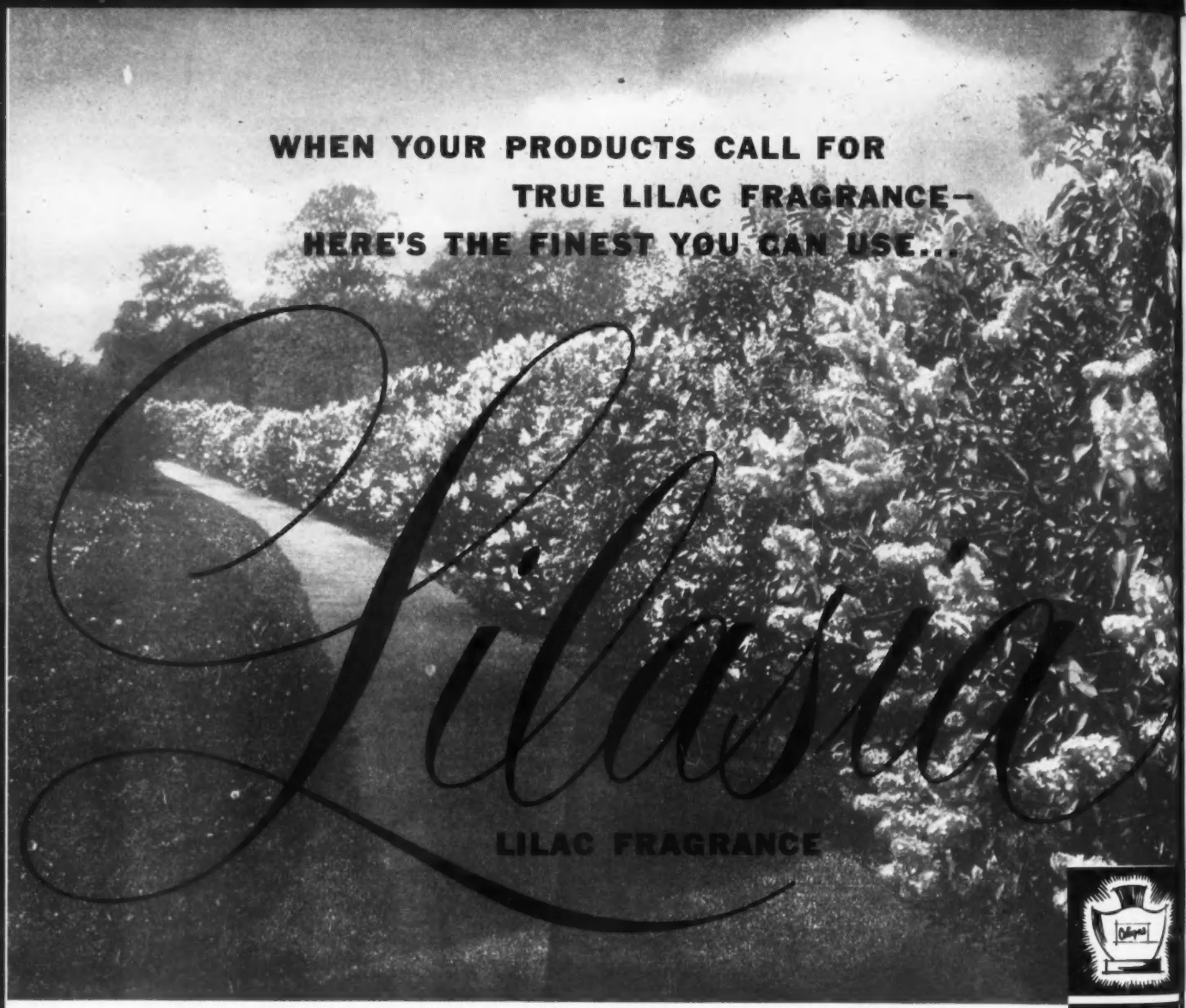

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Preventing Soap Scum in Shampoos

Requirements for an efficient sequestering and chelating agent to dissolve scum or curd if present in shampoo

PAUL I. SMITH

A PROBLEM constantly facing manufacturers of soap shampoos is how to prevent scum or curd from forming, and more important still, to dissolve it if already present. The obvious solution to the problem is to use an efficient sequestering and chelating agent and this presents some difficulty. The requirement for a suitable agent may be summarized as follows:

(1) The additive must be one that has been tried by experience to be effective and trouble free.
(2) It must be free from toxicity and readily compatible with soap ingredients.
(3) The agent must not induce discolouration or impart undesirable changes in the structure of the soap.
(4) It should not affect the clarity of the shampoo and not encourage cloudiness or haze on storing.

These requirements are difficult, but not impossible to fulfill, and in the writer's view, they are more nearly fulfilled by use of ethylenediamine tetracetic acid and its salts. Some considerable experience has been gained with this complex agent and it has proved itself as a most efficacious sequestrant and chelating compound that is particularly well suited to use in the soap trade.

Fatty Acids And Aluminum

ALUMINUM is now an established favourite for processing equipment, piping and storage tanks handling fatty acids even at boiling point temperatures. It has, however, been found by experience that some highly refined free acids, such as oleic, do tend to attack aluminium at elevated temperatures if no moisture is present. A wise precaution, and one recommended by the aluminium companies themselves, is that a trace of moisture should always be present with the fatty acids so as to prevent corrosive action. This is a wise precaution. Incidentally, glacial acetic acid is compatible with aluminium provided a trace of moisture is present.

Food or Technical Grade Anti-Oxidants

MANUFACTURERS are often uncertain which grade of anti-oxidant to use for their oils and greases—food or technical. The price differential is usually quite appreciable and the natural inclination is to use the technical grade for a non-edible product. On the other hand, anti-oxidants are used in such small concentrations, about 1 part in 10,000 being quite common for some of the recommended alkylated phenols, that cost would appear to be of secondary importance. The advantages offered by food grades of anti-oxidants include high purity and greater effectiveness at minimum concentrations. It pays, therefore, to pay that little extra for the premium grade and thereby to reduce the risk of product contamination.

Irish Moss In Soap Shampoos

EXTRACTS of Irish Moss, frequently known in technical circles as calcium Carragheen sulphates, are very useful additives to shampoo formulations where it is considered that there is some danger of hydrolysis. Irish Moss extracts offer several practical advantages to the soaper, e.g.,

(1) They are available in dry form in a great many modifications of solubility, viscosity and stabilizing action.
(2) They are economical in use as small percentages are quite effective.
(3) Irish Moss in the prepared form offered to the trade is neutral and may be safely applied in a wide pH range.
(4) There is no risk of precipitation or cloudiness when this additive is employed.

Rhodia Introduces New Lavender Product

Lavender Reinforcer R. P., a new development in the field of essential oils, is being produced by Rhodia, Inc. The product is based on various ketones that are found in natural oil of lavender. It is said to benefit any kind of lavender, giving high ester products more tenacity and improving low ester oils. The manufacturer recommends it especially for soap if lavender and lavandin are used.

L. Sonneborn Sons, Inc. Announce Price Increases

Price increases on petroleum sulfonates (mahogany soaps) and petrolatum has been announced by L. Sonneborn Sons, Inc. Prices on all-grades of petroleum sulfonates are increased by ½¢ per pound, and petrolatum prices are up ⅜¢ per pound.

Primary reason for the price increases is higher raw material costs. Shortages are not anticipated.

NEWS and EVENTS

Roger & Gallet Sales Show Increase

Robert D. Buckalew, vice president of marketing at Roger & Gallet, has announced that the company's sales

Robert D. Buckalew

are 41% ahead of last year. To handle the large increase, production capacity at the new Roger & Gallet plant at Burgaw, N. C., has been stepped up.

Mr. Buckalew attributes the rapid expansion to a greatly accelerated advertising program, a substantially larger sales force, and a more intensive promotion of the top-sellers among the company's products.

FTC Charges Discrimination By Cosmetic Firms

Federal Trade Commission has charged four of the country's leading cosmetic manufacturers with unfairly discriminating among their customers in the granting of sales promotion aids.

Named in the complaints were Elmo, Inc., Philadelphia; Hudnut Sales Company, New York; Helena Rubinstein, Inc., Long Island City, N.Y., and Yardley of London, Inc., New York. Complaints against other firms are being considered.

The complaints charge that advertising allowances, cooperative advertising materials, payments for demonstrator salesmen and the like were not made available "on proportionally equal terms" to all competing customers.

The complaints resulted from an investigation made to determine whether companies were complying with the trade practice rules for the cosmetic and toilet preparations industry.

The firms have thirty days to answer the complaints. Hearings are slated starting January 23 in New York.

SCC Holds Annual Technical Meeting

The Society of Cosmetic Chemists held its annual technical meeting and medal award tenth anniversary dinner-dance in New York City on December 15. Technical papers were read, and installation of officers took place at luncheon.

The Medal Award Tenth Anniversary dinner-dance took place in the evening. The 1955 medalist is Dr. Ernest Guenther, vice president and technical director of Frizsche Brothers, Inc.

DCC Holds Annual Scientific Meeting

An outstanding panel of speakers participated in the annual scientific meeting of the Drug, Cosmetic and Chemical Institute which took place in New York City on December 16. The program consisted of the following:

Richard E. Vicklund, of Givaudan Delawanna Corp., who spoke on "Deodorant action of bacteriostatic soaps and cosmetics"

Dr. K. S. Karsten, Vanderbilt Co., "Industrial fungicides and problems of toxicology"

Dr. H. J. Wills, Chemical Corps Medical Laboratories, "Drugs for treating anticholesterinase poisonings"

Dr. Alfred Halpern, Schieffelin & Co., "Horizons in drug and cosmetic research"

Dr. Louis C. Barail, professional consultant, "How package labeling can be lawful, life-saving and lucrative"

Jerome Trichter, Director, Bureau of Foods and Drugs, City of New York, "Current drug problems facing the department"

Dr. Emanuel Revici, physician, "A chemical approach to the control of cancer."

Miss Mala Rubinstein Travels to Cuba

Miss Mala Rubinstein, director of the Helena Rubinstein Salons, spent a week in Havana, Cuba in Novem-

Miss Mala Rubinstein

ber. She lectured on beauty at a fashion show in the Hotel Nacional and held individual beauty consultations at a large Havana department store, Fin de Siglo.

Canadian Cosmetic Companies Merge

The Pond's Extract Co. of Canada Ltd., Toronto, and the Canadian branch of the Chesebrough Manufacturing Co., Cons., Montreal, have merged. The name of the continuing company is Chesebrough-Pond's (Canada) Ltd.

Synthetic Ambergris Produced by Dragoco

For perfumers and cosmeticians, Dragoco, Holzminden, Germany, has produced under the name Ambropur Dragoco a new synthetic ambergris marketed in ampoules of 5, 20 and 50 grams. The product has been developed in the company's research center and is claimed to be not only another ambergris body, but a true copy of the genuine ambergris in its chemical constituents and fragrance. Samples and information may be obtained from Dragoco, Holzminden, Germany.

May the Gifts of Peace
and Happiness be Yours

HAZEL-ATLAS GLASS COMPANY

Chicago Chapter SCC Installs New Officers

Dr. Sylvia Kramer was installed as chairman of the Chicago Chapter of the Society of Cosmetic Chemists for 1956 in a ceremony featuring the annual observance of President's Night, November 8. The president of the national Society, Dr. Kenneth L. Russell, officiated at the induction rites.

Other officers for the forthcoming year are: Gustav Carsch, chairman-elect; Murial Zeitlin, secretary; and Peter Parker, treasurer.

Chandler Medal Award To Vincent du Vigneaud

Dr. Vincent du Vigneaud, Nobel Prize winner in chemistry for this year, was honored by the award of the Charles Frederick Chandler Foundation medal at the Men's Faculty Club of Columbia University on November 9.

The award was instituted in 1910 when friends of Prof. Chandler presented to Columbia University a sum of money which constitutes the foundation, the income from this fund to be used to provide a lecture by an eminent chemist and to present the lecturer a medal in recognition of his achievement in pure or applied chemistry. Dr. du Vigneaud, professor of biochemistry at the Cornell University Medical College, was chosen for his brilliant contributions to the knowledge of biochemistry, his most recent achievement being the first synthesis of certain polypeptide hormones.

Among those present were Dr. Z. P. Lobel of Revlon; Dr. Donald Price, consulting chemist; and Dr. Victor G. Fourman of Syntomatic Corp.

Noted Movie Star Carmel Myers Is Now in Perfume Business

Carmel Myers, star of the silent movies who played opposite most of the leading men from Rudolph Valentino to John Barrymore, who, since her retirement has been sponsoring young talent, has entered the perfume business.

Last month Carmel Myers introduced Zizanie, a toilet water created and produced by Fragonoid of Grasse, France. The toilet water is packaged in a novel aluminum container and promises to find a ready market in the United States. Miss Myers is located at 895 Park Ave., New York, N. Y.

Colgate-Palmolive Co. Announces Promotions

The Colgate-Palmolive Co. has announced three promotions in its research and development department.

Dr. W. W. Wellman has been appointed leader of the aerosol toilet articles group. He is a member of the committee on Personal Products Standard Methods of the Chemical Specialties Manufacturers Assn., and of several honorary societies. Dr. Wellman was graduated from Marshall College, and received the Ph.D. degree from Ohio State University.

Virgil Richter now heads the exploratory oral products group. He joined the company in 1950 after completing graduate studies at Ohio State University.

Gerald Jahoda becomes group leader for the research and development information center. He studied for the master's degree in library science at Columbia University, and has instructed courses in chemical literature at the University of Wisconsin. He is an alumnus of New York University.

Revlon, Inc. To Sell Stock

Revlon, Inc. has filed with the SEC a proposed sale of 373,900 common shares. Of this total, 272,067 shares are to be sold by the company, and the remainder by selling stockholders.

This is the first time the company has made a public offering of its securities since its organization in 1932. Proceeds of the company's portion of the offering, expected to exceed $3,000,000, will be used to complete payment for a newly acquired plant and equipment.

Problems of Morocco told to Perfumers by H. Gregory Thomas

H. Gregory Thomas, president of Chanel Inc., world traveler, scholar and lawyer, held the close attention of a large audience of perfumers and guests at the November 16 meeting of the American Society of Perfumers when he related the history of Morocco and explained its various complicated problems and great service France has rendered to that country. The lecture took about two hours and was illustrated with colored slides, maps and moving pictures.

As he spoke with authority from an intensive personal study of the country his explanation of the economic and political problems of the country was particularly enlightening.

Michael Lemmermeyer Gives One-Man Show

The paintings of Michael Lemmermeyer, president of Aromatic Products, Inc., were presented in exhibit at the 42nd annual meeting of the Chemical Specialties Manufacturers Assn., in New York City, on December 5-7. Included were 40 oil paintings, portraits and water colors. The show provided the focal point for the trade association's four aerosol festival display.

Mr. Lemmermeyer received his early art training at Cooper Union, and continued his studies in both the United States and France while serving as an artist with the U. S. Army in World War I.

Robert D. Buakalew (center), vice president in charge of marketing at Roger & Gallet, is seen discussing plans with Miss Dorothy Morrison, publicity and promotion director, and George Bailey of Dowd, Redfield & Johnstone advertising agency for national promotion of Lip Ade. The long established product now has silicones added to the orginal formula.

To this good old world... *In the good old way,*

What has anyone ever found better to say

Than

May you be peaceful

Healthy, and glad—

May the New Year

Be better

Than any you've had!

May you enjoy

Every blessed minute!

It's wished from the heart,

And our whole heart's in it.

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N. Y. Chapter of SCC Hears Talk on Sucrose Derivatives

A large audience of members of the New York Chapter of the Society of Cosmetic Chemists listened attentively to a lecture by Dr. Lloyd Osipow, research group director, Foster D. Snell, Inc., on "Sucrose-Derivatives in Cosmetics" at the November 30 meeting.

Sucrose esters form a new class of non-ionic emulsifiers which as a class are non-foaming, non-toxic and have a low order of irritation. They are tasteless and odorless and will soon become commercially available for use in the food industry, the pharmaceutical industry and the cosmetic industry. Many applications are possible.

The lecture was another one of the outstanding addresses arranged for the Chapter by the Program Chairman Gabriel Barnett. At the conclusion of the lecture Dr. Osipow answered numerous technical questions.

It was the last meeting of the Chapter under the skillful direction of the retiring chairman, Michael A. Stanton, the founder. The Chapter grew rapidly in numbers and because of the high standards it maintained in the papers presented as well as its other useful work it readily won the respect of the cosmetic industry.

New officers of the chapter for the coming year are: Warren Dennis, chairman-elect; Beverly Meigs, secretary; and Theodore Ostrowski, treasurer.

U. S. Industrial Chemicals Adds Two Alcohol Denaturing Plants

U. S. Industrial Chemicals Co., Division of National Distillers Products Corp., has added two new combination alcohol denaturing plants, bonded warehouses and solvent distribution points. One is at Tuscola, Ill., the production point of the company's synthetic alcohol, and the other at Newark, N. J., where it replaces a smaller operation.

These plants, along with existing units at New Orleans, La.; Anaheim, Calif.; and Chicago, Ill., permit overnight deliveries to alcohol and solvent users throughout most of the country.

Mennen Co. to Supply U. S. Winter Olympic Team

The Mennen Co. has been named supplier of toiletries for the American Winter Olympics squad, according to William Mennen, Jr., executive vice president. The company will supply each of the 156 members with a complete kit of products chosen to provide comfort in outdoor low temperature weather. Competition for the 1956 Olympics will begin in Cortina, Italy, January 26-February 5, 1956.

Lilly Dache Boutique Displays Christmas Gifts

For the Christmas shopper the Lilly Dache boutique in New York City offers "sense and nonsense" presents from all over the world. Among Indian buffalo bells studded with ruby, turquoise or jade stones and oil cans decorated with sequins, Miss Dache, who is president of Lucien Lelong Perfumes, Marie Earle Cosmetics and Lilly Dache Hair Products, offers such cosmetic items as the Add-A-Tone Powder Wardrobe, Lucien Lelong fragrances in golden bottles, and the Lucien Lelong Magic of India jewel box containing perfume.

Hazel Bishop Appoints Six Regional Sales Managers

Hazel Bishop, Inc. has announced the appointment of six new regional sales managers, each to be in direct charge of selling activities in his respective region.

They are: Charles Arnold, Eastern region; Irving Halperin, New England region; Howard Solomon, Mid-Western region; W. R. Allen, Western region; and Ames Howlett, East Central States region.

Donald Burr, president of the company, stated that sales in this quarter were at an all time high, and that a sales expansion program is being implemented.

Judges of the 1955 Aerosol Packaging Contest, sponsored for the fourth year by the Chemical Specialties Manufacturers Assn., look over some of the 150 entries. Left to right: Hoyt Howard, art director, Hoyt Howard, Inc.; Max Brown, director of sales and advertising, Fels & Co.; Michael Meisler, buyer for Saks Fifth Avenue; and Robert P. Long, editor and publisher of Gravure Magazine. The ten packages judged best are seen on the right. Cross Country Rose and Floral Spray (center foreground), a Sears Roebuck & Co. product, was judged most outstanding. Other winners are, bottom row: Jetco Spring Blossom Air Freshener from Jewel Tea Co.; Dupli-Color Spray Enamel, Dupli-Color Products Co., Inc. Middle row: Fire Chief Fire Extinguisher, Marlowe Chemical Co., Inc.; Palmolive Rapid Shave Lather Cream, Colgate-Palmolive Co.; Blue Grass Spray, Elizabeth Arden Sales Corp.; Xpose Suntan Cream Lotion, Walgreen Drug Stores. Top row: Christmas Snow, Airosol Co., Inc.; Rust Veto Spray, E. P. Houghton & Co.; and Ambush Spray Cologne, Dana Perfumes, Inc.

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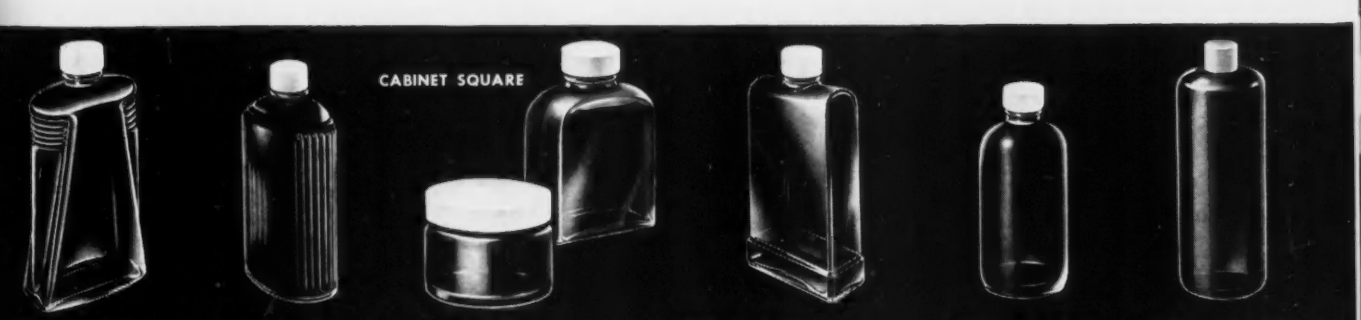

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Gleaming, crystal-clear bottles in many eye-catching designs—that's Maryland Glass styling! (Or, if you prefer, we will design a distinctive shape for your use.) And these Maryland Glass bottles are *practical* . . . sturdily constructed to fill and pack easily, keep breakage to a minimum.

Stocked for service? We have a complete range of sizes in all styles, ready to fill your order immediately. Tell us about your product in the coupon below and we'll send prices and samples. No obligation, of course.

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The demand for perfection

Since ABRAC PURE PERFUMERY CHEMICALS were first introduced, perfumers everywhere have come to recognise the remarkable distinction that odour-perfection imparts to their creations. These aromatics, free from all impurities, have brought new values to the perfumery world.

Sheer beauty and transcendent clarity of odour, constancy and integrity — these are the shining qualities that both create and satisfy the demand for perfection.

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BENTALOL	pure Benzyl Alcohol
CEPHROL	pure (+) Citronellol
HYDRONAL	pure (+) Hydroxycitronellaldehyde
IPHANEINE	pure *iso*-Butyl Phenylacetate
LINDENOL	pure (±) *alpha*-Terpineol
MELLOL	pure Phenylethyl Alcohol (2-Phenylethanol)
MEPHANEINE	pure Methyl Phenylacetate
MERANEINE	pure Geranyl Acetate
MERANOL	pure Geraniol
PHANTEINE	pure Linalyl Acetate
PHYLLOL	pure Eugenol
TRESSEINE	pure *iso*-Amyl Salicylate
YAMINAL	pure *alpha*-Amyl Cinnamaldehyde (stabilised)

ABRAC

A. BOAKE, ROBERTS & CO LTD LONDON E15 ENGLAND · CAPETOWN · MADRAS · SYDNEY

Esther Williams, film and aquatic star, has been named chairman of the research and new products testing department of Alpha Laboratories, Inc. She is seen with Mrs. Gladys Gardner, president of the company.

Important Staff Changes In Kolmar Laboratories

Important changes in the staff of Kolmar Laboratories, Milwaukee, Wis. took place on December 1 when Lessing L. Kole, founder, became chairman of the board of directors. W. K. Wick succeeded Mr. Kole as president.

The following staff members have been appointed officers: R. L. Kole, vice president and treasurer; J. B. Rix, secretary; Dr. H. Heinrich, vice president and director of research; F. J. Entringer, vice president and controller; R. M. Neuman, vice president in charge of eastern manufacturing operations; C. R. Kircher, vice president in charge of lipstick research; M. E. Spinapolice, vice president in charge of product development; and E. J. Maruszewsli, vice president in charge of world wide manufacturing standards.

The company has further intergrated and solidified the Kolmar staff by appointing Dr. Otto Jacobi, assistant director of research and William Buth, chief development chemist.

Henry Groh has been appointed president of Kolmar-Wilckens of Canada. Because of health Fred Wilckens has retired.

Kolmar's subsidiary and affiliated companies are: Kolmar International, J. B. Rix, president; Kolmar Cosmetic Specialties, J. M. Markham, president; and Wickhen Products, J. B. Wick, president and Dr. H. Heinrich, vice president.

An interesting sidelight on Wickhen, which is the chemical division, is the fact that staff members such as Messrs. Wick, Heinrich, Entringer, Neuman, Kircher, Spinapolice and Maruszewski own 60 per cent of the stock while Kolmar Laboratories, which financed the operation, owns 40 per cent. The company did this in order to show its appreciation and to build up estates for its top personnel. Mr. Kole announces that the company will continue to intergrate other young staff members into either Wickhen or Kolmar Laboratories.

Kolmar Laboratories operates plants in Milwaukee; Port Jervis, N. Y.; Hollywood, Calif.; Barrie, Ont., Canada; Sydney, Australia; and Vincennes, near Paris, France. It has five sales offices in key cities of the United States.

Chemists Must Answer Problems of Atomic Energy says Zuckert

Chemistry must supply the answers to the problem of materials for reactors, radiation corrosion, reprocessing, disposal of wastes and a host of others that now stand in the path of making peacetime utilization of atomic energy a vital reality, Eugene M. Zuckert, former member of the Atomic Energy Commission told a large audience at the November 30 dinner meeting of the Drug, Chemical and Allied Trades Section of the New York Board of Trade.

Fundamental research is the first step and the problem of scientific training is a second step. The lecture was stimulating and brought home to the executives in the chemical industry the great part they are called upon to play in developing atomic energy for peace time uses.

Pierre J. Coutin Elected President of Ph. Chaleyer, Inc.

Pierre J. Coutin has been elected president of Ph. Chaleyer, Inc. He has been associated with the essential oil and aromatics chemical industry abroad and in the United States for 28 years.

Mr. Coutin has been an active member of the Essential Oil Assn. of the U.S.A. and has served as secretary-treasurer until his election as vice president two years ago. Since he came to the United States he has won a host of friends throughout the allied industries who will be delighted to learn of his election as head of the enterprising Ph. Chaleyer, Inc. organization.

Trubek Labs Acquires Truland Chemical Co.

Trubek Laboratories of East Rutherford, N. J. has acquired Truland Chemical Co. of Union, N. J. Truland will be a wholly-owned subsidiary with no change in personnel.

New Process for Imparting Odors to Printed Matter

The outstanding exhibit at the fourth annual advertising essentials show in the Hotel Biltmore, New York, November 14-16 was the display of the Fragrance Process Co. which showed how fragrance may be employed in direct mail printed matter to emphasize the product being advertised.

The company manufactures scented compounds which can be applied to promotion pieces after printing. In addition to compounds to give the odor of coffee, chocolate, strawberry, tobacco, leather, maple, butter, etc., the company is working on the odor of new cars for dealer promotion.

The adaptation of odor to commercial promotion attracted many visitors to the booth. Alfred Neuwald was in attendance to explain the process. The scenting is done as a separate final impression using a plain tint block plate, the compound being fed from the ink fountain after wash up.

Unemployment Insurance Law Affects Small Businesses

The New York State Department of Labor is urging all small businesses with one, two or three employees to check on their status under the New York State Insurance Law.

As a result of 1955 amendments, any firm which has three or more employees on any day in 1956 will become liable for the unemployment insurance tax on wages for the rest of 1956 and all of 1957; and in 1957 any firm which has two or more employees on any day will come under the law.

Mrs. Dennis James, wife of the television emcee, was recently awarded the Lentheric Adam's Rib award for being the most feminine woman behind the man in the television industry. She is seen with the award.

Max Factor Returns From European Tour

Max Factor, president of Max Factor & Co., and Mrs. Factor have returned from a ten week business and pleasure tour of Europe. Mr. Factor spent three weeks in London and another at his firm's British branch in Bournemouth. On the continent the Factors visited Venice, Florence, Rome and Madrid.

During his stay in London Mr. Factor made a guest appearance on the British Broadcasting Corp. television variety show, "More Contrary." He gave viewers some of the latest beauty secrets and make-up hints, and provided a before and after make-up demonstration, using two English girls as his models.

Hazel Bishop Executives Receive Stock Options

Raymond Spector, chairman of the board of Hazel Bishop, Inc., has announced that 33 executives and divisional sales managers will be granted stock options under a plan approved by the company's board of directors.

Mr. Spector pointed out that this capital gain incentive has attracted top talent to the company and has assured a continuance of its key personnel.

Plastic Engineers Talk on Packaging

A symposium held by the New York section of the Society of Plastic Engineers at the Hotel Statler in New York City on November 16 had "Plastics for Packaging" as its theme. Representatives from leading commercial companies discussed plastic materials, their suitability for different types of packaging, processing techniques and future trends in the field.

The speakers and their subjects were: Anthony Dragonette of Bakelite Co., cast vinyls; Robert B. Carter, of Celanese Corp. of America, acetate; E. V. Hellyar, of Monsanto Chemical Co., styrene; Mark B. Stringfellow of Spencer Chemical Co., polyethylene; T. H. Derby of American Viscose Corp., cellophane; John L. Jenemann of E. I. du Pont de Nemours & Co., Inc., mylar; Edwin A. Edberg of Koppers Co., Inc., expandable polystyrene (foam plastic); James F. Bernard of the Visking Corp., polyethylene films; Earle L. Kropscott of the Dow Chemical Co., styrene; and W. D. Lahey of B. F. Goodrich Chemical Co., vinyls.

The evening session featured addresses by Lloyd Stouffer, and Egmond Arens, designer, of the Egmond Arens Co., Inc. Mr. Arens cited the versatility and adaptability of plastic materials as a great challenge and opportunity to designers to produce packages of good design and low cost.

On display were exhibits featuring commercially used plastic packages by leading manufacturers, including such companies as the Monsanto Chemical Co. and E. I. du Pont de Nemours & Co., Inc. Among these the display of polyethylene cosmetic packages of all types was outstanding.

Lux Soap Receives A Guilded Color Wrapper

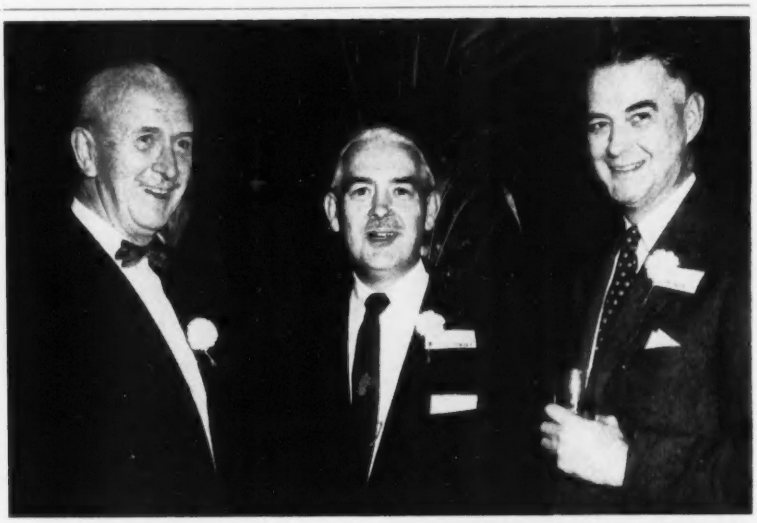
Lux soap, a product of the Lever Bros. Co., is now sold in a gold foil wrapper with blue letters as a result of the laboratory and field tests conducted by the Color Research Institute.

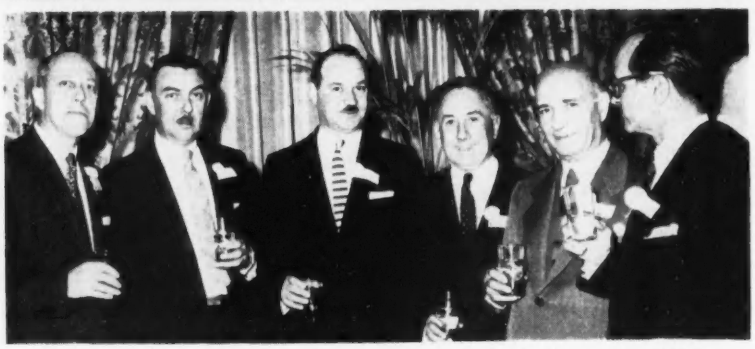
Louis Cheskin, director of the institute, says that sales have more than doubled since the introduction of the new package. Four designs in gold and silver foil wrappers were considered, along with the one formerly used. The newly adopted package is the one which was preferred by most of the consumers tested.

NAM Proposal for Manufacturers Cosmetic Tax Meets Opposition

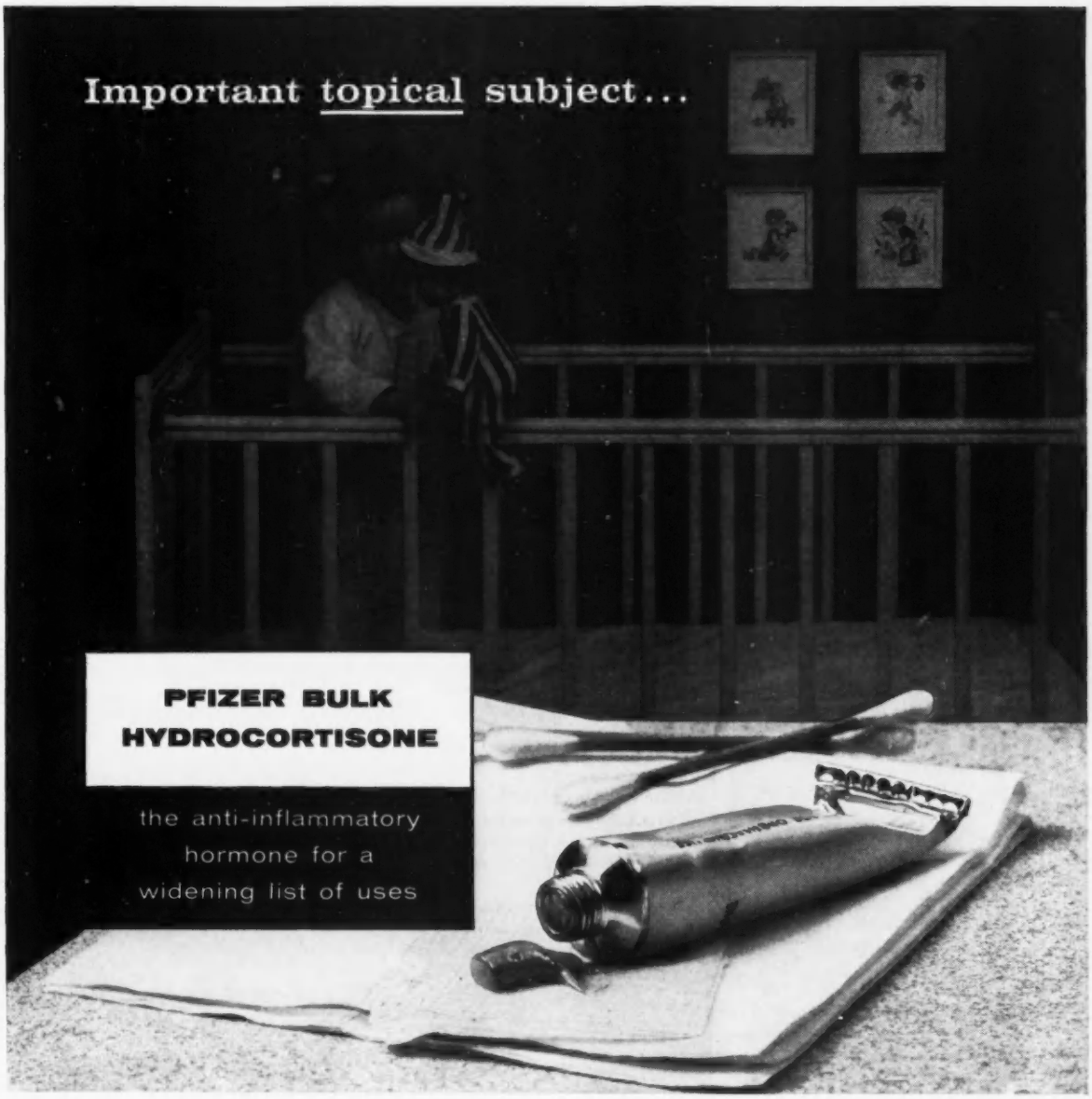
A recommendation by the National Assn. of Manufacturers that the retailers' tax on cosmetics be replaced by a manufacturers' tax has met strong opposition from the National Beauty and Barber Manufacturers' Assn., Associated Master Barbers & Beauticians, and the Toilet Goods Assn. These organizations claim that the manufacturers' excise tax on cosmetics, if adopted, will wipe out the tax exemption which beauty and barber shops now possess on cosmetics purchased for use in rendering professional services. The arguments against the change were included in a statement submitted to the Subcommittee on Excise Tax Technical and Administrative Problems, House of Representatives.

The subcommittee is expected to make recommendations, which will provide for a complete overhaul of the federal excise tax system, following receipt of suggestions for technical changes in excise taxes from the Treasury Department.





Over 350 members of the flavor, perfume, cosmetic, and allied industries attended the annual fall reception and cocktail party tendered by Givaudan-Delawanna, Inc. on November 17 at the University Club in New York. Top photo, left to right: K. Merkel, R. E. Horsey, vice president of sales of Givaudan-Delawanna, and W. Eagen of Colgate-Palmolive Co. Bottom photo, left to right: P. Bouillette of Givaudan-Delawanna; H. Costerg, A. Kreinik, M. Meunier and J. Serra, all of Parfums Dana; and E. R. Durrer, president of Givaudan-Delawanna.



● Two facts stand out in recent clinical reports on the topical use of hydrocortisone...its *safety*...and its *effectiveness* as a potent anti-inflammatory agent at the local tissue level.

These facts are expressed in reports by phrases like "especially effective in infantile eczema"... "marked relief...and no evidence of tissue rebound or untoward reactions" (nasal allergy study)... "valuable...in treatment of atopic dermatitis."

Have you considered use of this important steroid in your existing or new specialties...combined with antibiotics, for example? Whether you're making an ointment, lotion, aqueous suspension or other dosage form, you'll find addition of Pfizer Hydrocortisone increases its anti-inflammatory and anti-pruritic effectiveness.

Order Pfizer Bulk Hydrocortisone as the acetate or the alcohol *in regular* or *micronized form.*

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S.C.C. Seeks Exchange Of Research Information

In addressing the Chicago Chapter of the Society of Cosmetic Chemists on November 8, Dr. Kenneth L. Russell, president of the national organization, stressed the long-range importance of an exchange of ideas among scientists within the cosmetic industry. His plea that chemists pool their information on methods of exploration and evaluation in cosmetic research was previously voiced at a meeting of the New York Chapter of the Society on October 26.

"All research, whether directed toward cosmetics or toward other products or phenomena, generally consists of merely exploration and evaluation," Dr. Russell said, adding that the question of technique is one of the most troublesome problems facing the cosmetic chemists. As a tie-in to his suggestion that a free interchange of research information would benefit chemists and industry alike, he announced the formation by the Society of Cosmetic Chemists of a Committee on Test Methods.

Headed by Dr. Donald H. Powers, a past president of the Society, the committee will serve as an assembly point from which research techniques and methods solicited from members and non-members will be referred to outside laboratories for trial and criticism. The Committee will use the reports of the trials as a basis for deciding which methods merit the sanction of the Society. Techniques that are approved will be designated as official Society of Cosmetic Chemists' methods.

Proceeding from the theme, "Cosmetic Research—Exploration and Evaluation," Dr. Russell, a Director of Research at the Colgate-Palmolive Company, cited the progress and outcome of experiments that have resulted in the development of products that are in widespread use today. Slides were used extensively to illustrate his text.

As an example of a particularly successful research project, Dr. Russell traced the evolution of anti-enzyme ingredients in modern dentifrices. Launched in 1948, the quest for an effective enzyme inhibitor involved a painstaking, time-consuming search for a compound that would adhere to the oral membrances or dental plaque after the teeth-cleaning operation had been completed. After a series of tests, some of which took as long as two years, the anti-enzyme ingredient sodium N-lauroyl sarcosinate was proven to be superior to other compounds tested, and a dental cream containing this ingredient was subsequently marketed.

Laboratory methods of showing the electrostatic properties of the hair following shampoo and cationic rinse treatment were also discussed and illustrated. Dr. Russell mentioned that since the dampness of the hair and the humidity of the atmosphere influence the electrostatic charges, these conditions were artificially created during the research so that the experiments would encompass varying conditions of hair and atmosphere.

Dr. Russell demonstrated that the efficiency of antiperspirants can be effectively proven by the use of a control apparatus which measures the amount of perspiration excreted from treated and untreated under-arm areas. He pointed out that an antiperspirant will not give equal immunity of all users, and that to get an accurate evaluation of a test antiperspirant it is necessary to sample a large group of individuals.

A comparatively simple test was used in comparing the relative sticking of the skin after the application of hand lotions and creams, Dr. Russell said. Equipment for this test includes a metal disc and a magnet. The disc is placed on the skin surface to which the lotion or cream has been applied, and the amount of voltage required to draw the disc from skin to magnet indicates the respective stickiness of the products. Scientific ways of proving the effect of hand preparations on skin pH were also discussed by the speaker.

At the conclusion of his remarks Dr. Russell called upon the audience to assist in the Society's program to establish recognized methods of cosmetic evaluation.

Newcomen Society Honors Essential Oil Firm

The Newcomen Society in North America honored the firm of Magnus, Mabee & Reynard, Inc., now celebrating its diamond jubilee (1895-1955), at a dinner meeting in New York City on November 17. The meeting was presided over by Dr. Charles Penrose, senior vice president of the society. Percy C. Magnus, president of the essential oils firm, was guest of honor.

The Newcomen Society, which centers its work in the history of material civilization and the perpetuation of the best traditions of England and America, is affiliated with the Newcomen Society of England, and has a membership of over 13,500 leaders in business, industry, finance, insurance, education and correlated fields. The institution memoralizes the life of Thomas Newcomen, the British pioneer who made valuable contributions to the development of the steam engine.

The after-dinner address made by Mr. Magnus, "Magnun Opus: A World Treasury of Fragrance and Flavor," has been published in book form by the Princeton University Press. It tells of the growth and achievements of a corporate enterprise, Magnus, Mabee & Reynard, which draws its raw materials from all over the world and which supplies its products to no less than 80 industries in some 50 countries.

Dodge & Olcott, Inc., was one of eight firms and institutions, each more than 100 years old, elected to the newly formed Greater Paterson Chamber of Commerce Century Club. William W. Evans, Jr., presents the Century Club plaque to Brian McCabe and Bill Rosenberger of the company's Hawthorne, N. J. plant at the 48th annual dinner meeting of the city group.

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Directors of Natl. Beauty and Barber Manufacturers to Meet

The board of directors of the National Beauty and Barber Manufacturers' Assn. will hold a dinner meeting on January 17 in the Advertising Club, New York City.

Linde Air Products To Open Silicone Plant

T. J. Coleman, general manager of the silicones department of Linde Air Products Co., has revealed that start of operations at a new silicone plant in Long Reach, W. Va., in the near future will enable the company to keep pace with the growing demand for silicones.

Silicones are a new family of chemicals which have been generally available commercially for only a few years. Industry uses them for many applications, including cosmetics, defoaming agents, molding compounds and bonding agents.

Druggists Aim to Increase Sales

An extensive program of research, education and marketing, aimed at increasing sales for drug retailers, wholesalers and manufacturers, was adopted by members of the National Wholesale Druggists Assn. at their annual meeting in White Sulphur Springs, W. Va., November 5-9.

Miss America of 1956 was hostess at an open-house party on December 6 given by Fluid Chemical Co. at the 42nd annual convention of the Chemical Specialties Manufacturers Assn. She is Miss Sharon Kay Ritchie of Denver, Colo. The convention was attended by leading manufacturers of drugs, cosmetics and perfumes.

GCMI Semi-Annual Meeting Is Held in Miami Beach

The semi-annual meeting of the Glass Container Manufacturers Institute, Inc. was held at the Hotel Fontainbleau, Miami Beach, November 29-December 1.

J. S. Heuisler of the Maryland Glass Corp. was chairman of the program committee which consisted of George F. Collins, Jr. of the Liberty Glass Co. and K. C. Frazier of Olin Mathieson Chemical Corp.

Chicago Cosmeticists Hold Thanksgiving Party

The Chicago Perfumery, Soap and Extract Assn. held a Thanksgiving meeting and party at the Svithiod Singing Club on November 22.

American Management Assn. To Discuss Public Relations

The first conference on public relations ever to be conducted by the American Management Assn., national management educational organization, will be held January 19-20 at the Hotel New Yorker, New York, N. Y.

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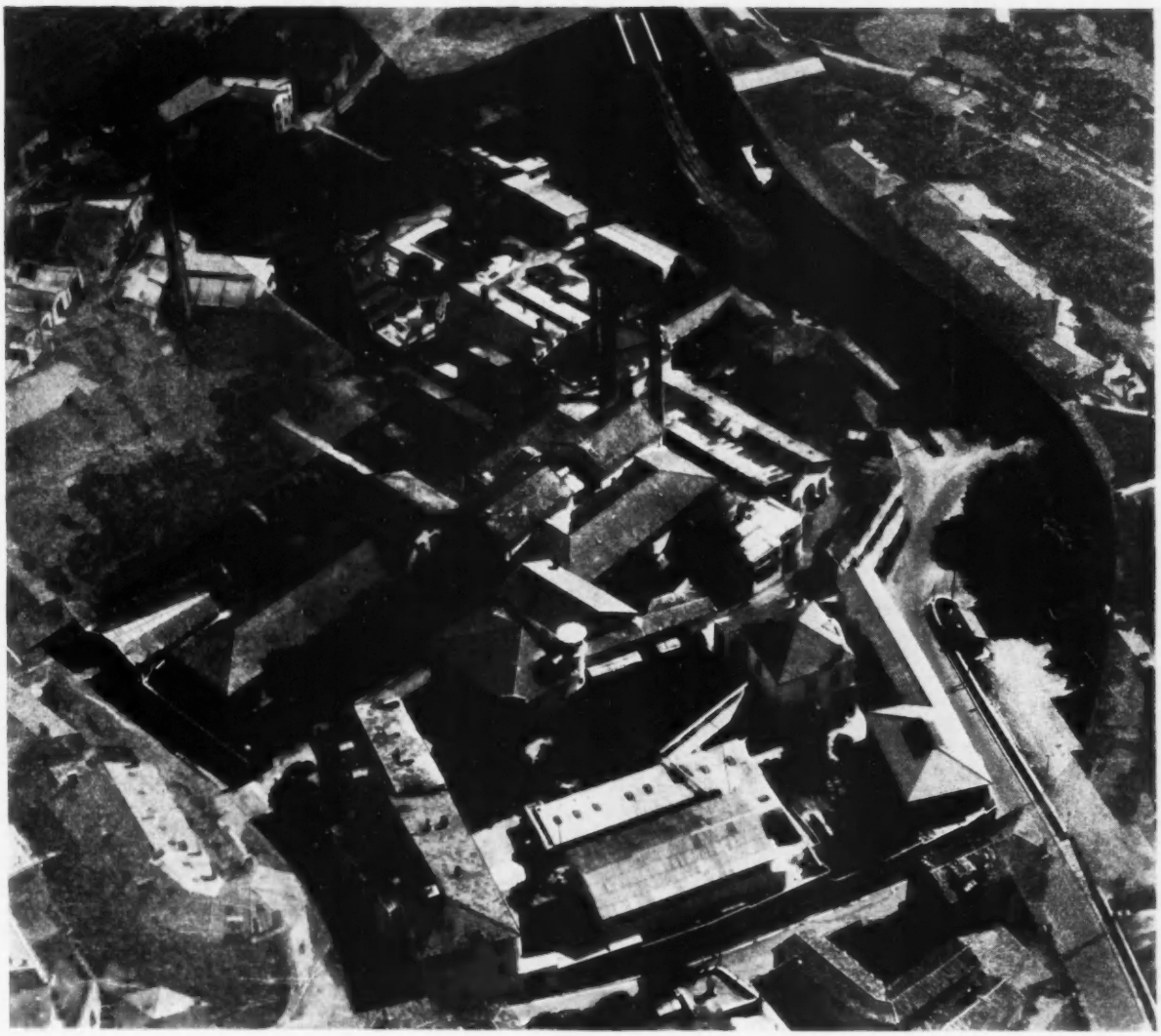

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Expansion of Antoine Chiris Organization Under Way

F. E. Shoninger, president of Antoine Chiris, Inc., New York and managing director of Antoine Chiris, Ltd., London, England, has returned from a week's visit to the French com-

F. E. Shoninger L. A. de Chiris

pany's headquarters in Grasse, at which time he attended top management meetings as a member of the Board of Directors.

Under the guidance of its Chairman, Leon A. de Chiris, and the general management of Pierre Moirez, the French Chiris company in the last few years has been engaged in a process of modernization, both from a point of view of scientific and industrial development as well as from a point of view of personnel changes and general rejuvenation of the business. For a company which has had a history of nearly 200 years of unchanged ownership, this process of modernization from every point of view and in every department has represented a considerable effort on the part of the top management.

Up to the present moment, and for some time past, the Management has consisted of:

Pierre Moirez, general manager; Joseph Maunier, commercial manager; Dr. Georges Igolen, technical manager; Jacques Maisondieu, sales manager and assistant commercial manager; Louis Benezet, assistant technical manager; and Pierre Carnot, chief perfumer.

Joseph Maunier, who succeeded his father in the Chiris company, has reached the age of retirement and has submitted his resignation as commercial manager of the company. Mr. Maunier has been with the firm of Antoine Chiris from the time that he left the university, and has devoted a long life of fruitful and valuable collaboration with the company in various capacities from salesman to commercial manager. He will continue to live in Grasse and remain associated, though not actively, with the Chiris company as advisor to the company on technical and commercial matters, where his advice will be invaluable to his successors.

Jacques Maisondieu joined the Chiris company some ten or twelve years ago as assistant to the commercial manager, and after having had a great deal of experience in all of the departments of the company, was appointed sales manager and deputy commercial manager. He will now take over the job of commercial manager and will, at the same time, continue his responsibilities as sales manager.

Mr. Shoninger reports that he is very much inspired and encouraged to see the development in the French Chiris company and its alignment to a certain extent to the methods of industrial and social operations which are practised in the United States and the United Kingdom.

Under Leon A. de Chiris' and Mr. Moirez' management, the flavoring division of the French company has increased both in personnel and in output many-fold in the last few years. Recently Dr. Manfred Vock, who is a well known German food and flavor chemist, was engaged by the company to head their flavor division.

The Industrial Aromatic Manufacturing Department of the French company has developed to a point where a new and modern adjunct to the factory was recently constructed, and Antoine Chiris, Grasse, is functioning now with one of the most modern and up-to-date isolation plants in the world.

Further plans for development and expansion were discussed in the meeting and these will be announced at a later date.

Lady Esther Co. Gives Library To American-Korean Foundation

In an unusual gesture of international good will, the Lady Esther Co. presented to the American-Korean Foundation its collection of more than 250 books as a gift to a university library in Korea. Charles T. Silloway, president of Lady Esther, made the presentation to Major General (ret.) Charles W. Christenberry, president of the foundation.

The book collection, including rare volumes more than 100 years old, was developed by the founders of the company. The books cover a wide range of subjects in the fields of literature, history and religion.

Michigan Chemists Hold Annual Christmas Party

The Chemical and Allied Industries Assn. of Michigan held its 23rd annual party at the Hotel Sheraton-Cadillac in Detroit on December 3. The program included a reception, dancing with the orchestra of Earl Perkins, and a special dinner.

Urge Removal of Tax On Cosmetic Favors

The National Beauty and Barber Manufacturers' Assn. and the Toilet Goods Assn. have asked Congress to remove the federal tax on miniature cosmetic favors which beauty salons and other retailers must pay when purchasing these items for distribution to their customers for advertising and promotional purposes.

In a statement submitted to the Subcommittee on Excise Tax Technical and Administrative Problems, House of Representatives, Jacob Reck, counsel, contended that in addition to being a tax on business cost items, a tax on samples given away free constitutes taxation of advertising and promotion.

Linings for Squeeze Bottles Prevent Permeability

Extension of the convenience of the unbreakable plastic squeeze-bottle to entirely new fields of products has become a reality with the development of linings that prevent permeability of certain basic ingredients and make the bottle a practical package for many common products for which it was formerly unsatisfactory, Plax Corp., Hartford, Conn., reports.

The bottle-in-a-bottle effect of the linings makes it possible to package a broad group of essential oils, emulsions and lubricants in unbreakable polyethylene bottles without outer surface greasiness or loss of flavor and odor, according to Plax.

Various accelerated shelf life tests developed by Plax have proved the linings effective for a wide selection of water-in-oil emulsions. The barrier effect of the linings prevents contact with the bottle walls and reduces permeation of a variety of essential oils so that products containing them will retain taste and odor characteristics for practical shelf life periods, according to the producer.

Canned Soft Drink Sales Up 100 Per Cent

A 100 per cent increase in the sale of canned soft drinks this year over 1954 is predicted by the American Can Co. J. Whitney King, Canco marketing manager, says that about 500,000,000 cans of carbonated beverage will be sold by the end of the year, in comparison with some 250,000,000 in 1954, the first year in which the carbonated beverage was offered in cans.

Packers are spending large amounts of money on advertising and promotion to assure market development that will lead to sound growth of the industry, according to Mr. King.

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NOT ONLY the poet and the painter, but the perfumer, too, can derive inspiration from the tranquil beauty of a Hawaiian sunset or from the grace and simple charm of its gentle people. To prove the point, we invite you to sample HOALOHA —which means *beloved companion*—and see if this appealing, long lasting, semi-oriental fragrance doesn't suggest the warmth, beauty and serenity that pervades this Pacific Island paradise. Basic to its composition is an attractive and unique blend of spices on a woody, resinous foundation, lightly touched with rose and embodying a note faintly reminiscent of tobacco. HOALOHA is truly a perfume designed to become the wearer's most intimate and beloved companion, and we believe you will find the connotation of its name a most appropriate one. If you'd like a free trial sample of this fragrance for use in extracts, toilet waters or colognes, just write us on your letterhead and ask for HOALOHA.

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HERE is our Sub-Division Laboratory where we weigh, pack and label units of less than drum quantity. This division—a model of orderliness and efficiency—operates in a light, clean atmosphere, ideally regulated for the storage and handling of the many delicate oils and aromatics that enter and leave this department on their way to customers' plants throughout the world. An ingenious system of coding, handling and checking reduces the incidence of error to an absolute minimum and accounts in large measure for our firm's remarkable record of trouble-free, on-time deliveries of our customers orders. This is a record of which we are justly proud and a continuing source of satisfaction to those who use our goods. The efficiency of this laboratory's direction and operation is a key factor in its enviable record.

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NOW THAT I LIKE!

When it comes to judging medicines, this member of the younger set is something of a connoisseur, even though his only criterion of value is: *How does it taste?* Let a test potion but touch his lips and you will be wise to accept his yip or yowl, smile or scowl for what it is truly worth—the uninhibited reaction of a very competent authority. You will be wise, too, to try and improve the taste of your product if his behavior in any way suggests disapproval—for this young man represents, in his very small way, the critical attitude of an increasingly large group of worthwhile customers. May we offer you the expert services of our specialists in producing a flavor for *your* product that will meet the taste demands of this highly discriminating audience.

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Beauty and Barber Manufacturers to Meet

The National Beauty and Barber Manufacturers' Assn. will hold its 15th annual convention at the Conrad-Hilton Hotel, Chicago, on August 18, 1956. The convention will immediately precede the 1956 Dealers Trade Show and convention of the Beauty and Barber Supply Institute.

Pennsalt to Build Fluorine Chemicals Plant

The Pennsylvania Salt Manufacturing Co. has announced that a large fluorine chemicals plant will be built at Calvert City, Ky., as part of the company's expansion program.

Michigan Chemists Hold November Meeting

The Chemical and Allied Industries Assn. of Michigan held its monthly meeting on November 28 in Detroit. The program consisted of the election of officers and a movie.

Brand Names Day Grows to a Week

Brand Names Foundation has extended the traditional Brand Names Day to Brand Names Week. The 1956 observance will begin on April 16. Brand Names Day, to be marked during the week, will fall on April 18.

Obituary

Prince Artchil Gourielli-Tchkonia

Prince Artchil Gourielli-Tchkonia, 60, a descendant of the former ruling family of Gouria, Georgia, and husband of Helena Rubinstein, died November 21. Since 1941 he had headed the House of Gourielli, manufacturers of cosmetics for men.

Prince Gourielli served in the Imperial Russian Army during World War I. He left Georgia in 1921 when that country was taken over by the Communists, going to France and in 1937 to the United States. He married Helena Rubinstein Titus in 1938.

Surviving besides his wife is a sister, Princess Maria Chavchavadze.

Louis McFarland Timblin

Louis McFarland Timblin, treasurer and a director of Chas. Pfizer & Co., Inc., died November 21 at the Mather Memorial Hospital following a heart attack. He was 56 years old. Mr. Timblin joined the concern in 1940 as auditor.

A. Theodore Anderson

Funeral services were held November 16 for A. Theodore (Ted) Anderson, assistant sales manager of the Container and Accessory division of Kimble Glass Co., a subsidiary of Owens-Illinois. Mr. Anderson is survived by his wife.

Among Our Friends

JEAN PIERRE PROAL, son of H. Proal, chairman of Payan & Bertrand, Grasse, France has visited in New York for the purpose of conferring with the A. K. Peters Co., which represents Payan & Bertrand for the sale of French essential oils. He attended a dinner meeting of the Amis de la Langue Francaise de la Parfumerie, where he met many old friends of the company. In addition to visiting many of the points of interest in New York and vicinity, M. Proal will proceed to Washington, Toronto, and Montreal and then continue to California and Mexico before returning to France. He has just completed a year of military service in the French army, partly served in Africa, and will take up his new duties with Payan & Bertrand on January 1.

CHARLES PISANO, president of Citrus & Allied Essential Oil Co. is now on his annual trip to his plantation in the West Indies.

JAMES M. BOOHECKER, general manager of Dorothy Gray, Ltd., has been named to the board of directors of Lehn & Fink Products Corp., it was announced by Edward Plaut, president and board chairman of Lehn & Fink, at the annual stockholders meeting. Dorothy Gray, a leading cosmetic house, is one of the three major subsidiaries of Lehn & Fink, which also comprises the Lehn & Fink and Tussy Cosmetiques divisions. Mr. Boohecker became general manager of Dorothy Gray one year ago, after 19 years with the company. He joined the firm's sales department in 1936 and was named sales manager in 1943.

JERRY LAVAN of Lanvin Parfums has been elected president of Balenciaga, American representative of Balenciaga of Paris.

ALBERT C. CEREGHINO has joined the Trendex Division of the Humko Co. as head of Sales and Product Development of Trendex fatty acids and glycerides in the New York, Philadelphia and Boston areas. Mr. Cereghino had been with Luria-Gournand as director of Commercial Development.

Chemo Puro Manufacturing Corp. has moved its plant and executive offices to an 11-acre site in Newark, N. J. Greater production capacity and economy of operation are expected to lower prices and permit expansion of its line of fine chemicals. The company soon expects to enter the field of petrochemicals. The new plant is located on the Passaic River and has a pier for barge transportation. It has a siding on the New Jersey Central Railroad, is two miles from Newark Airport, and, being near the New Jersey Turnpike, is easily reached by truck.

GEORGE G. KOLAR, the new president of the Society of Cosmetic Chemists, has had an interesting

George G. Kolar

career. He studied at the University of Chicago, where he received the B. A. degree and then took post-graduate courses. He joined Kolar Laboratories, Inc. as a chemist, and in 1946 was elected president. He has been active in the SCC Chicago Chapter, where he was program chairman and later chairman. He also served as chairman of the membership committee of the parent Society of Cosmetic Chemists in 1953 and 1954. He has been a member of the American Chemical Society since 1939. Mr. Kolar is the author of papers which have been published in industry magazines, books and encyclopedias.

JOSEPH GAIDZIK has been appointed field sales manager of the western part of the United States for Kings Men and 42 Products. His itinerary will also include part of Canda. Mr. Gaidzik has represented Kings Men and 42 Products for 15 years, originally handling the San Francisco Bay area.

CHARLES WESLEY DUNN, president of the Food Law Institute, is lecturing in Sweden and Denmark on the Food and Drug Law in the United States. The lecture has been printed in booklet form and is available at Mr. Dunn's office at 608 Fifth Ave., New York City.

BENJAMIN F. BANTA, Jr., export manager of the Andrew Jergens Co., was elected chairman of the Drug & Chemical Export Club of the Foreign Credit Interchange Bureau at the club's annual meeting. Paul Clever, assistant export manager of Mallinckrodt Chemical Works, was elected vice-chairman.

HARRY T. JOHNSON has been appointed to the newly created post of general sales manager of Parfums Cor-

Harry T. Johnson

day, Inc. Mr. Johnson has previously been general manager of Elizabeth Arden, and general sales manager of Helena Rubinstein and Kathleen Mary Quinlan.

LEO L. KAHN has been appointed sales representative for the west coast division of Polak & Schwarz, Inc. Mr. Kahn was formerly associated with Max Factor & Co., Hollywood. He will cover the perfume and cosmetic trade on the West Coast.

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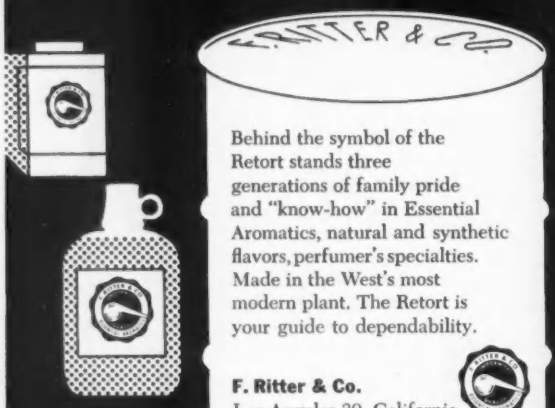

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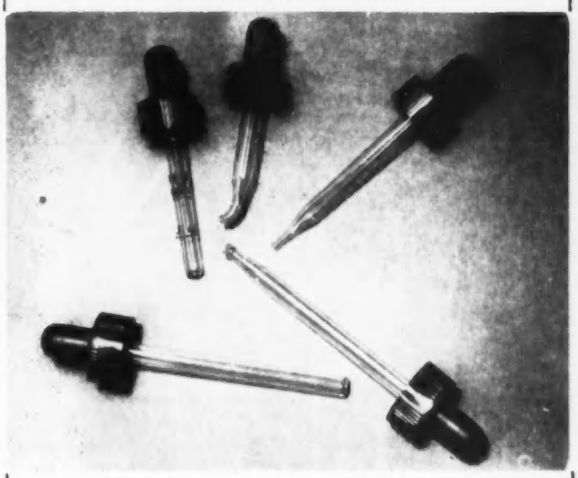

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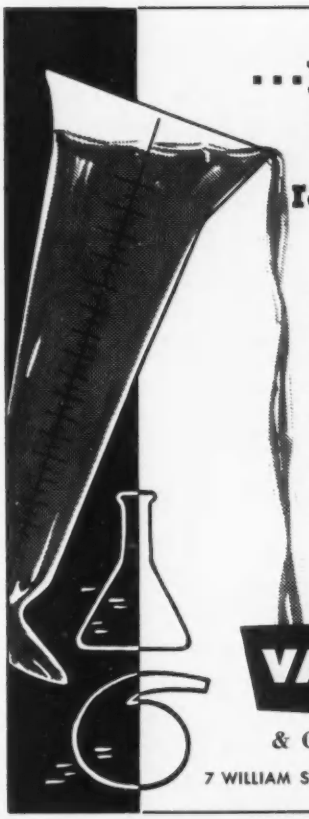

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HENRY A. MOLTENI has been named plant manager in charge of all plant operations by Onyx Oil &

Henry A. Molteni

Chemical Co., Jersey City, N. J. He has been associated with the company since March, 1955 as assistant director of research in charge of product development and technical service.

PAUL E. WEBER has been appointed sales manager of the chemical sales division of Chas. Pfizer & Co., Inc. He succeeds Frank F. Black, who has resigned from this position. Mr. Weber joined the company in 1938 as a field sales representative.

GEORGE MCCARTY has been appointed to the west coast sales force of Onyx Oil & Chemical Co. He will work from the Onyx office in Los Angeles. Mr. McCarty was graduated from the University of California at Berkely in 1950 with a BA degree in chemistry.

J. H. KAYLOR has been appointed production manager of the Hazel-Atlas Glass Co. Formerly superintendent of the company's Montgomery, Ala. plant, he will now be located in the general office at Wheeling, W. Va.

MARSHALL SANGSTER is the new manager of the Formed Products division of American Plastics Corp., a wholly owned subsidiary of Heyden Chemical Corp.

GUSTAV L. NORDSTROM has resigned as executive secretary of the National Paper Box Manufacturers Assn. to join the Folding Paper Box Assn. of America in Chicago as of January 1. A. E. Murphy, executive director of the folding carton concern for 22 years, continues with the group, until retiring, as special assistant to the president, Norman F. Greenway.

E. ALLEN NEWCOMB has been elected president and chief executive of Malmstrom Chemical Corp. Mr.

E. Allen Newcomb

Newcomb has been active in the drug and cosmetic field for the past 22 years, and for the past 5 years has headed the National Wholesale Druggists' Assn. as executive secretary.

BETTY J. MEANS has joined the microbiology staff of Food Research Laboratories, Inc. Miss Means was formerly with Merck & Co., where for a number of years she supervised the sterility testing program in the control laboratories of that company.

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Market Report

Optimism Continues to Prevail

PRICE developments in raw materials included an advance in petrolatum for the second time this year, a softening in menthol and heliotropine, and a generally strong tone in both wood and gum rosins. Much optimism continued to prevail in most basic materials. Going into the final month of the year, dealers, manufacturers and others associated with the industry expect that the year's volume will run ahead of last year.

PRICE CHANGES

	CURRENT	PREVIOUS
ADVANCES		
Oil nutmeg	$4.50	$3.85
Coumarin	$3.45	$3.25
Petrolatum, USP, tanks—		
White	0.05½	0.05⅛
Snow	0.06	0.05⅝
Beeswax, ref. yellow	0.68	0.66
Japan wax	0.45	0.42
Oil dillweed	$3.60	$3.50
Stearic acid, carlots—		
Single pressed	0.14¾	0.14¼
Red oil, drums	0.18½	0.18
Tallow oil, acidless, tanks	0.12	0.11½
Carnauba wax, No. 1, yellow	$1.08	$1.00
DECLINES		
Oil bois de rose (rosewood) Brazilian	$4.35	$4.50
Menthol—		
Brazilian	$7.75	$8.50
Synthetic, laevo	$7.90	$8.25
Gum styrax, Asiatic	0.75	0.80
Oil garlic, oz.	$3.75	$4.25
Coconut oil, crude	0.10¾	0.11
Linalyl acetate, 90-92%	$5.40	$5.70
Anisic aldehyde (aubepine)	$2.20	$2.40
Oil cananga, native	$8.25	$8.75

Prices per pound unless otherwise specified.

SPICE GROUP FIRMER—

Fairly substantial advances in oils nutmeg featured the spice oil group over the past month. Prices on both the West and East Indian varieties scored advances to reflect the exceedingly strong situation in grinding nutmegs. Prices on the spice virtually doubled within a relatively short period as the result of crop reports from primary centers. The hurricanes early in the fall did considerable damage to the crops. Other spice oils displaying considerable strength included pimento berry and ginger.

ROSEWOOD SOFTENS—

The appearance of low cost Peruvian rosewood oil served to have a softening influence upon the market for the Brazilian product. While the lower cost oil failed to bring about general acceptance on the part of consumers, nevertheless, it was indicated that some users were showing much interest in the Peruvian material. Prices for Brazilian rosewood dropped 15 cents a pound to $4.35 to $4.50 per pound according to quantity. The Peruvian product was available here at prices ranging from $3.90 to $4.10 a pound.

TEMPORARY SOFTENING—

Peppermint oil prices lost further ground over the past month, but the softening in the market was believed to be temporary. Spot oil was offered at prices below those named for some of the better known brands in the country. The demand for peppermint was quite brisk with seasonal influences serving to lift sales. Spearmint remained in a generally firm position with a tendency on the part of some dealers to hold goods for slightly higher prices.

SMALLER VANILLA CROP—

While trade in vanilla beans was seasonally quiet, a decidedly firmer tone developed in the market on latest crop reports from Mexico, and a doubling in shipping prices for Tahitian beans. Latest estimates place the size of the new crop in Mexico at only about 50 tons in contrast to earlier estimates of 100 tons. Comparatively few offerings of Bourbon beans have been coming through from Madagascar.

ALCOHOL PRICES TO ADVANCE—

A general advance in prices for proprietary solvent alcohol and other formulae is likely to take place January 1, 1956 as the result of increasing costs. One major producer, U. S. Industrial Chemical Co., Division of National Distillers Products Corp., has already announced a 5 per cent increase in its bulk selling price for pure ethyl alcohol to become effective at the start of the new year. The price move marks the first increase in alcohol prices in several years.

FATTY ACIDS UP—

Prices on red oil and stearic acid moved upward toward the close of last month in keeping with the stronger trend in greases. Both items were moved up ½ cent a pound establishing the tankcar price of red oil at 16½ cents. New and higher price for single pressed stearic acid in carload lots became 14¾ cents per pound.

MORE CAMPHOR IN SIGHT—

Some fair size lots of natural camphor should be arriving here by late February or early March in the light of reports from Japan.

COUMARIN IN BETTER SUPPLY—

After remaining in a generally tight supply position for many months offerings of coumarin began to increase late in November. The article is used by perfumers and for masking odors and there have been reports to the effect that the article holds some rather encouraging possibilities in the metal coating industry. Prices to contract customers were recently increased 20 cents a pound to the basis of $3.45 per pound in 200-pound containers; $3.55 for twenty-five pound containers and $3.70 for five pound lots.

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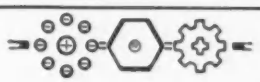

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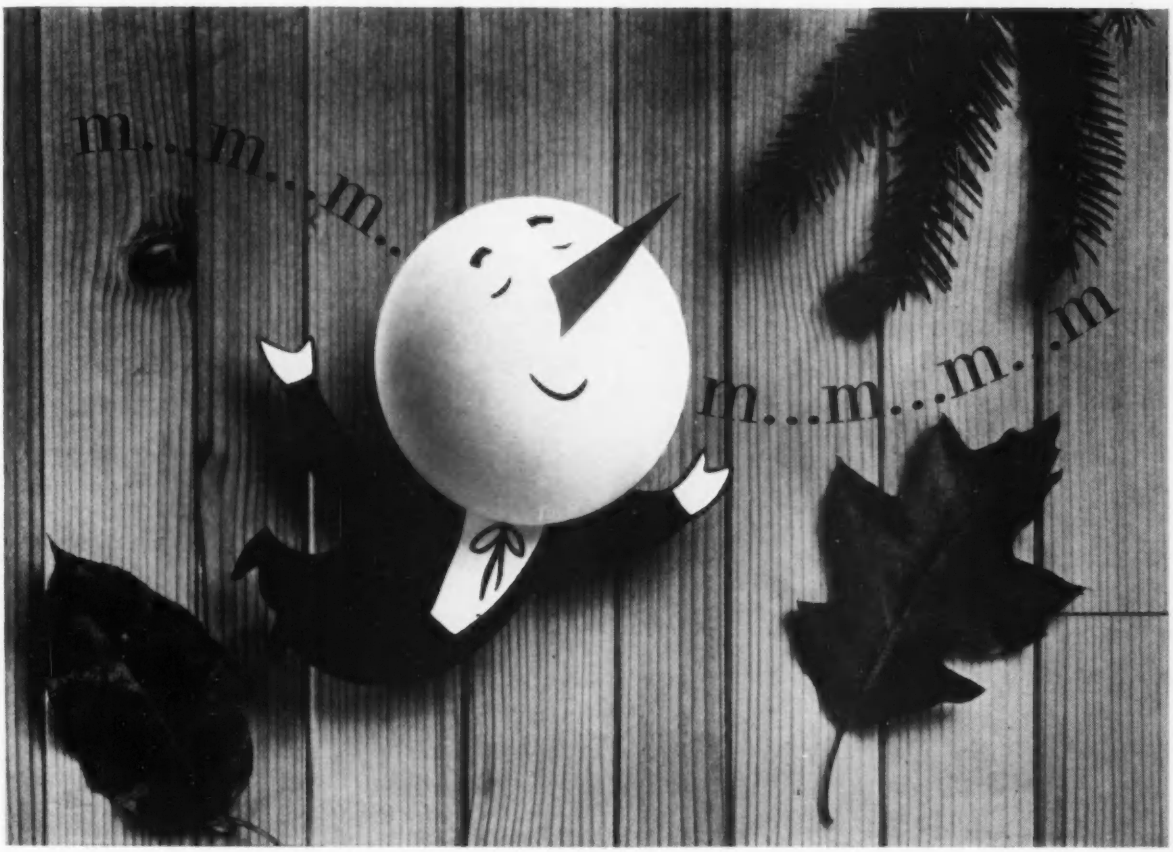

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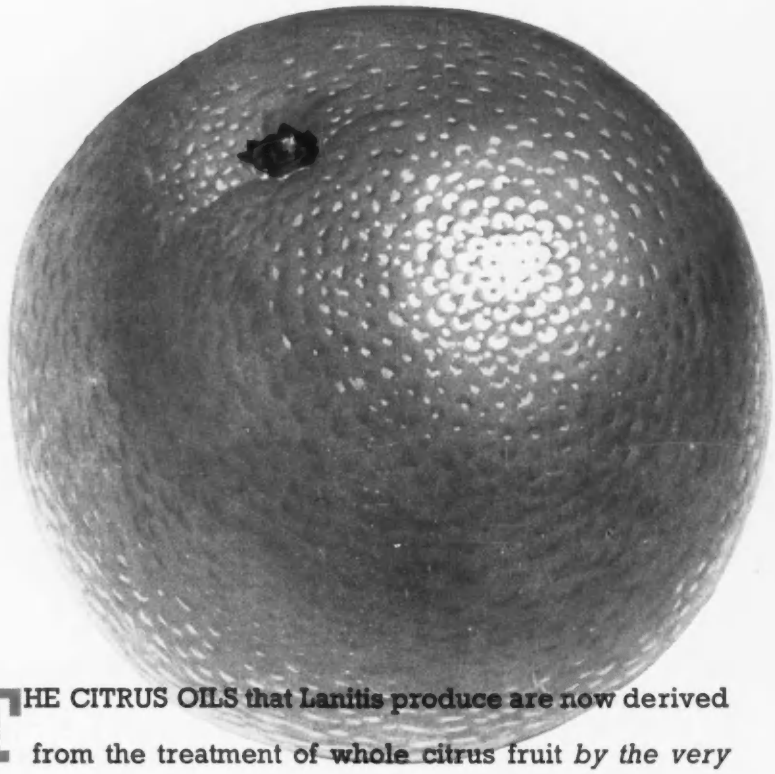
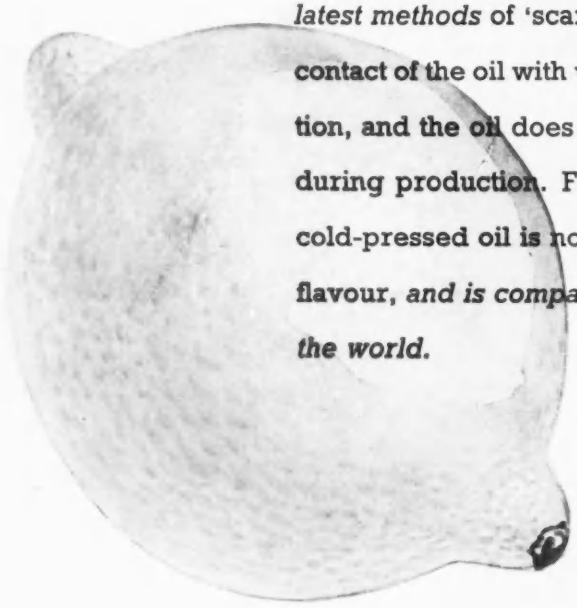


THE CITRUS OILS that Lanitis produce are now derived from the treatment of whole citrus fruit *by the very latest methods* of 'scarification.' These entail the minimum contact of the oil with water during the process of oil extraction, and the oil does not come into contact with the juice during production. For these reasons the finest quality of cold-pressed oil is now produced, retaining all its delicate flavour, *and is comparable with oils produced anywhere in the world.*



We will gladly send full information and *samples* of Lanitis essential oils. Please write to: THE CALVERT MILLS CO.
44 Whitehall St., New York 4, N.Y.
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